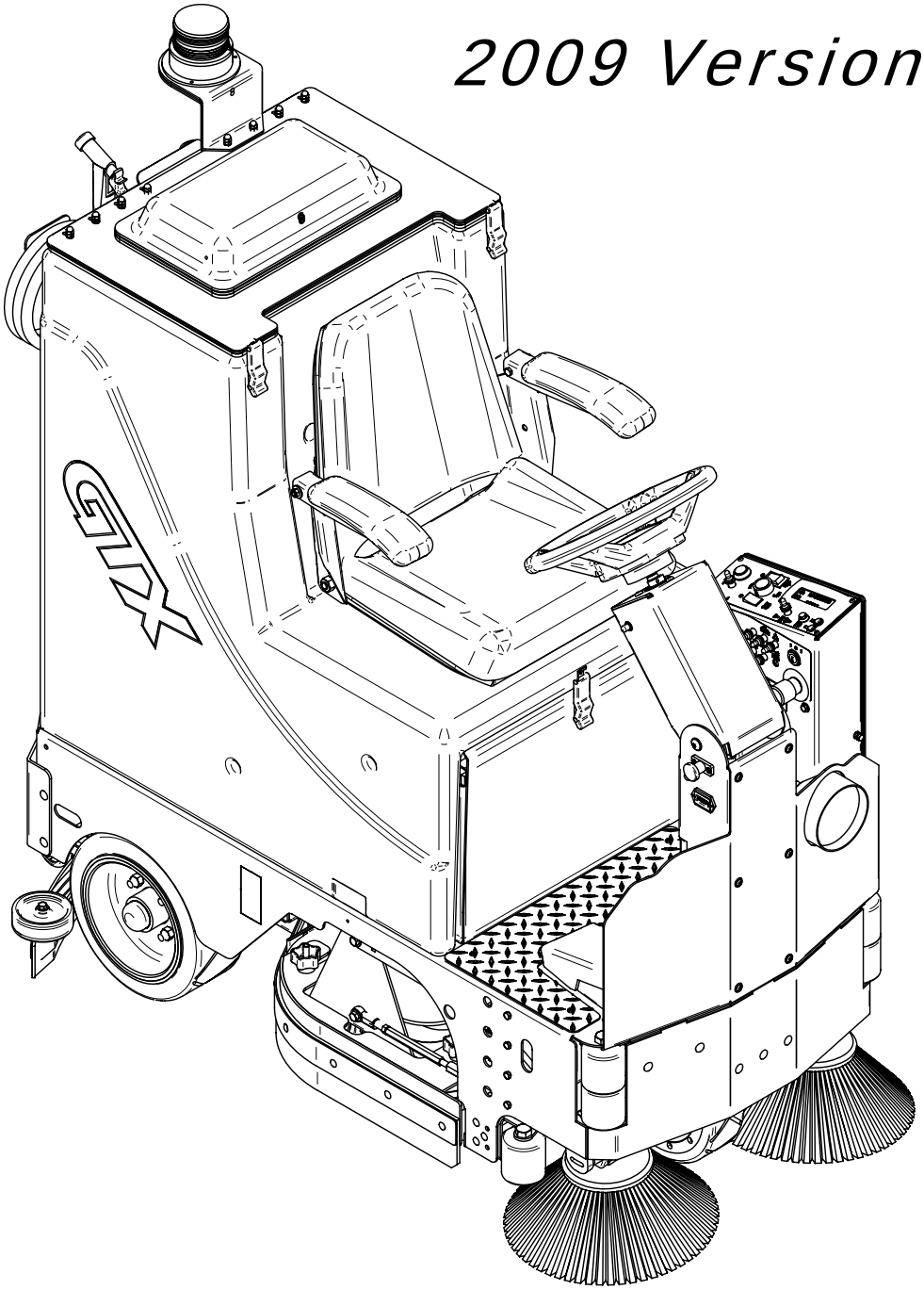
Model GTX

Operator Manual

GTX Series

2009 Version 3.0



R.P.S. Corporation
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Racine, Wi. 53404

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HOW TO USE THIS MANUAL

This manual contains the following sections:

- HOW TO USE THIS MANUAL
- SAFETY
- OPERATIONS
- MAINTENANCE
- PARTS LIST

The HOW TO USE THIS MANUAL section will tell you how to find important information for ordering correct repair parts.

Parts may be ordered from authorized **TOMCAT** dealers. When placing an order for parts, the machine model and machine serial number are important. Refer to the MACHINE INFORMATION page which is filled out during the installation of your machine. The MACHINE INFORMATION is located on page one of this manual.

The serial number of your machine is located on the lower steering pedestal of the steering column of the machine. **(See Picture Below)**

The SAFETY section contains important information regarding hazard or unsafe practices of the machine. Levels of hazards are identified that could result in product or personal injury, or severe injury resulting in death.

The OPERATIONS section is to familiarize the operator with the operation and function of the machine.

The MAINTENANCE section contains preventative maintenance to keep the machine and its components in good working condition. They are listed in this general order:

- Batteries
- Scrub Brushes
- Adjusting Squeegee
- Service Schedule
- Machine Trouble shooting

The PARTS LIST section contains assembled parts illustrations and corresponding parts list. The parts lists include a number of columns of information:

- **ITEM** - column refers to the reference number on the parts illustration.
- **PART NO.** - column lists the part number for the part.
- **QTY** - column lists the quantity of the part used in that area of the machine.
- **DESCRIPTION** - column is a brief description of the part.
- **COMMENTS** - column for information not noted by the other columns.

NOTE: If a service or option kit is installed on your machine, be sure to keep the KIT INSTRUCTIONS which came with the kit. It contains replacement part numbers needed for ordering future parts.

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STANDARD WARRANTY POLICY (RPS Corporation)

RPS Corporation warrants its machines, parts and accessories to be free of manufacturer's defects for the periods specified below. Warranty will be granted at the sole discretion of RPS Corporation and is subject to final claim and parts review by R.P.S. Corporation and its vendors. This policy is effective January 1, 2010 and is subject to change on production units at a future date.

COVERAGE, EXCLUSIONS AND LIMITATIONS:

Coverage:	All Models sold (Sweepers, Scrubbers, Burnishers)
Parts:	36 months / 1,500 hours on "*Power On*" hour meter
Labor:	12 months
Travel:	3 months (150 mile maximum)
Poly Tanks:	7 Years
OEM Parts:	3 months
Validity:	Fully completed Machine Delivery Form (online or fax) is on record at RPS.
Limitation:	Warranty will begin on date of machine installation to end-user or 6 months after shipment from RPS Corp to the distributor if unsold at that time.

This warranty includes all parts on the machine except normal wear parts. Some of these exceptions are:

1. Any Brooms, Brushes, Pads or Pad Drivers including Center Clip Retainers
2. Floor Seals, Wipers, Splash Curtains, Squeegees or Gaskets.
3. Filters, Dust Collection Bags or Screens
4. The safety pins design to fail in shear, which are a fail-safe device
5. Belts, Hoses or Tubing.
6. Caster Wheels, Tires or internal tire tubes.
7. Vacuum motors with evidence of water/foam passage or more than 450 hours
8. Lights (Strobe, Headlights or bulbs).
9. The Batteries (see below).

- N**OT COVERED:** Routine maintenance, adjustments or parts damaged from abuse, neglect, improper use of the machine, or lack of scheduled "daily, weekly, monthly" maintenance in accordance with our published PM Sheets.

POLY TANKS: 7 Years Coverage against leakage due to manufacturer's defect in materials or workmanship. **NOTE:** Freight coverage for 3-Years under the parts section of warranty.

BATTERIES: Warranted through battery manufacturer for **One (1) Year** (prorated) from the date of delivery. The battery manufacturer approves or denies the warranty coverage after analysis. We rely on solely on their review. **NOTE NOT COVERED:** Damage from lack of water, failure to use OEM charger, or non-distilled water.

Machine Information

Model number_____

Serial number:_____

Installation date:_____

Installing dealer:_____

Dealer contact: _____

Address:_____

City, state, zip: _____

Phone number:_____

This operator and parts manual should be considered a permanent part of the unit and should remain with the unit at all times. This operator and parts manual covers all the GTX series scrubbers. You may find descriptions and features that are not on your particular model. The information and specifications included in this publication were in effect at the time of printing.
R.P.S. Corporation reserves the right to make changes without notice incurring any obligation.

To register for warranty, fax your warranty registration form today! Fax # (886)-632-6961

R.P.S. CORPORATION
P.O. BOX 368
RACINE, WI 53401
PHONE: 800-634-4060

MACHINE DELIVERY FORM

Dealer: _____ **Installed By:** _____

Location: (City, State)_____ **Install Date:** _____

Customer Information

Name:_____ **Contact:** _____

Address:_____ **City/State:**_____**Zip**_____

Phone Number :_____ **Fax Number:** _____

Model Number:_____ **Serial Number:**_____ **Hour Meter:**_____

Squeegee Size:_____ **Squeegee Material:** Gum Linatex Neoprene **(circle one)**

Buyer's representative has received instruction in proper operation of the following controls and features:

- ☐ Filling Solution Tank, Solution Tank Sight Tube, Solution Drain Valve
- ☐ Adjusting Controls and "Uni-Touch" operation, Double Scrubbing, Squeegee Delay & Vac Timer
- ☐ Recovery Tank Draining and Cleaning, Vac Screen Removal and Cleaning
- ☐ Shroud and Pad Removal
- ☐ Shroud Adjustment
- ☐ Solution Valve and Filter Operation (removal and cleaning)
- ☐ Drain Saver Feature
- ☐ Charging Operation
- ☐ Seat and Steering Wheel Adjustment
- ☐ LCD Screen Display Operation, 3 Hour Meters (keyswitch, brush, traction drive)
- ☐ Tank Tilt Back Feature
- ☐ Parking Brake Override
- ☐ Checking Battery Electrolyte Level
- ☐ Squeegee Hose Removal and Checking For Clogs
- ☐ Battery Guide Poster Hung Up & Reviewed
- ☐ Maintenance Guide Poster Hung Up & Reviewed

In addition to the items listed above the buyers representative has received the operator's manual and been advised to read the manual before operating the machine.

Installed By (print)_____Signature_____

Buyer's Representative (print)_____Signature_____

BUYER AGREES TO PAY FOR ANY REPAIRS, ADJUSTMENTS, OR SECONDARY TRAINING THAT MANUFACTURER DETERMINES IS EXCLUDED FROM THE WARRANTY

COMPLETE AND FAX FORM to 866-632-6961

SPECS	Disk	Cylindrical
BODY CONSTRUCTION		
Tank Material:	(3/8") Roto-Poly	(3/8") Roto-Poly
Frame Construction:	3/16" Coated Steel	3/16" Coated Steel
Front Wheel:	10" x 3"	10" x 3"
Rear Wheel:	(2) 12" x 5"	(2) 12" x 5"
Body Dimensions (L x W x H):	54" x 26" x 55"	54" x 26" x 55"
Width (squeegee):	32" or 35"	32" or 35"
Weight (w/out batteries):	780 pounds	780 pounds
Weight (w/ standard batteries):	1,222 pounds	1,222 pounds
BRUSH/PAD SYSTEM		
Brush/Pad Diameter:	GTX-26D - (2) 13 inches GTX-30D - (2) 15 inches GTX-34D - (2) 17 inches	GTX-24C - (2) 22" x 5.5" GTX-27C - (2) 25" x 5.5" GTX-30C - (2) 28" x 5.5" GTX-34C - (2) 32" x 5.5"
Motor Power (standard):	(2) 0.75 hp / 300 rpm	(2) 0.75 hp / 300 rpm (24" & 27")
Motor Power (HD Option):	(2) 1.0 hp / 350 rpm	(2) 1.0 hp / 350 rpm (30" & 34")
Brush Pressure:	0-250 pounds	0-250 pounds
Brush Pressure Settings:	(1-5) automatic	(1-5) automatic
Actuator Rating:	500 lbs.	500 lbs.
BATTERY SYSTEM		
System Voltage:	36 volts	36 volts
Battery AH Rating (Standard):	245 AH	245 AH
Battery AH Rating (Optional):	Up to 325 amp hour	Up to 325 amp hour
Battery Run Time:	Up to 7 hours	Up to 7 hours
Charger (110v / 60 Hz / auto):	36-v / 25-amp	36-v / 25-amp
SOLUTION SYSTEM		
Solution Tank Capacity:	35-gallons	35-gallons
Solution Flow Rate:	0 – 1.5 gal/min.	0 – 1.5 gal/min.
Solution Filter:	Stainless Inline	Stainless Inline
RECOVERY SYSTEM		
Recovery Tank Capacity:	35-gallons	35-gallons
Vacuum Horsepower:	1.0 hp or 2.0 hp	1.0 hp or 2.0 hp
Drain Hose:	2.0" Diameter	2.0" Diameter
Vacuum (Water Lift / Cubic ft/min):	68" / 70 cfm	68" / 70 cfm
Demisting Chamber:	3 Gallons	3 Gallons
Drain Saver:	30 cubic inches	30 cubic inches
DRIVE SYSTEM		
Standard Drive:	1 hp, Front Motor Wheel	1 hp, Front Motor Wheel
Speed Control:	Variable 0-320 ft.	Variable 0-320 ft.
Forward Speed:	0 – 320 ft/min	0 – 320 ft/min
Reverse Speed:	0 – 200 ft/min	0 – 200 ft/min
Minimum Aisle U-Turn:	56"	56"
Sound Level:	68 dBA	68 dBA
PRODUCTIVITY		
Cleaning Width & Rate/Hour:	24" / 26,400 sq.feet / hour 30" / 33,000 sq.feet / hour 34" / 37,400 sq.feet / hour	24" / 26,400 sq.feet / hour 27" / 29,700 sq.feet / hour 30" / 33,000 sq.feet / hour 34" / 37,400 sq.feet / hour

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Since our policy is one of constant improvement, all specifications are subject to change without notice.

Common Wear Parts

Brushes	Model 26"-Disk	Model 30"-Disk	Model 34"-Disk
Super-Grit	13-421 SS	15-421 SS	17-421 SS
Tough-Grit	13-421 S	15-421 S	17-421 S
Midi-Grit	13-421 C	15-421 C	17-421 C
Light-Grit	13-421 PS	15-421 PS	17-421 PS
Poly (.028)	13-421 P	15-421 P	17-421 P
Nylon (.016)	13-421 N	15-421 N	17-421 N
Tampico	13-421 T	15-421 T	17-421 T
Pad Driver	13-421 D	15-421 D	17-421 D
Diamond Driver	13-421 DD	15-421 DD	17-421 DD

Brush repair kit: 40-423 Replacement locating clip for all brushes.

NOTE: # In Disk Column Denotes Pad Size: 13,15, 17

Pads	Disk	Level	Color
Super-Black	##-422 BB	Very High	Black
Black	##-422 B	High	Black
Brown	##-422 BR	High	Brown
Green	##-422 G	Medium	Green
Blue	##-422 BL	Moderate	Blue
Red	##-422 R	Moderate	Red
White	##-422 W	Light	White

Extra pad driver retaining clip: 40-433

NEW STYLE CYL BRUSHES FOR MACHINE SERIAL #50000 & GREATER

Brushes	Model 24"-Cyl	Model 27"-Cyl	Model 30"-Cyl	Model 34"- Cyl
Super-Grit	N/A	N/A	N/A	N/A
Tough-Grit	225-821S	255-821S	285-821S	325-821S
Midi-Grit	225-821C	255-821C	285-821C	325-821C
Light-Grit	225-821PS	255-821PS	285-821PS	325-821PS
Poly (.028)	N/A	N/A	N/A	N/A
Nylon (.016)	225-821N	255-821N	285-821N	325-821N

OLD STYLE CYL BRUSHES FOR MACHINES PRIOR TO SERIAL #50000

Brushes	Model 24"-Cyl	Model 27"-Cyl	Model 30"-Cyl	Model 34"- Cyl
Super-Grit	N/A	N/A	N/A	N/A
Tough-Grit	22-521 S	25-521 S	28-521 S	32-521 S
Midi-Grit	22-521 C	25-521 C	28-521 C	32-521 C
Light-Grit	22-521 PS	25-521 PS	28-521 PS	32-521 PS
Poly (.028)	N/A	N/A	N/A	N/A
Nylon (.016)	22-521 N	25-521 N	28-521 N	32-521 N
Tampico	N/A	N/A	N/A	N/A

Squeegee blade kits & Complete Squeegee assemblies

Squeegee size	Model 24"-Cyl	Model 26"-Disk	Model 27"-Cyl	Model 30"-Disk	Model 30"-Cyl	Model 34"-Disk 34"- Cyl	Gum Rubber blade kit	Linatex blade kit	Complete squeegee assemblies
32" squeegee	Standard	Standard	Optional	Optional	Optional	N/A	22-770 G	22-770 L	23-7180
35" squeegee	Optional	Optional	Standard	Standard	Optional	N/A	25-770 G	25-770 L	25-7180
38" squeegee	Optional	Optional	Optional	Optional	Standard	Standard	28-770 G	28-770 L	28-7180
45" squeegee	N/A	N/A	N/A	N/A	N/A	Optional	290-770 G	290-770 L	290-7180

NOTE: Squeegee blade kits include (1) Rear Blade, (1) Front Blade, and (2) Backup Wheels with harware.
NOTE: Squeegee Assemblies (complete) listed above all come with Linatex blades.
NOTE: Size is stamped into the top of the painted steel squeegee body on all squeegee's.
NOTE: The squeegee is designed for narrow isles and may not have the same water control around tight turns as the larger squeegees.

SOAP
Heavy Duty Degreaser
Citrus
Freezer
Tire Mark Remover

For more soap information call PowerCat 414-745-9337
www.powercatsolutions.com

Safety Message

Your safety, and the safety of others, is very important, and operating this unit safely is an important responsibility.

To help you make informed decisions about safety, we have provided operating procedures and other safety information in the manual. This information informs you of potential hazards that could hurt you or others.

It is not practical or possible to warn you of all the hazards associated with operating this unit. You must use your own good judgment.

This is intended for commercial use. It is designed to be used on hard floors in an indoor environment, with the recommended pads or brushes.

1. Do not operate unit:

Unless trained and authorized.
Unless operator manual is read and understood.
If unit is not in proper operating condition.
Outdoors or exposed to rain.
For picking up hazardous materials/dust.
On surfaces having a gradient exceeding 2% unless the optional Parking brake is functioning on the machine.

2. When operating unit:

Remove loose objects from the floor that may be projected from the revolving brushes.
Keep hands and feet away from revolving brushes.
Do not operate machine where flammable liquids are present.
Use extreme caution when maneuvering.

3. Before leaving:

Make sure machine is turned off.
Stop on level surfaces.
Disconnect batteries.

4. Before servicing:

Stop on level surface, and secure machine.
Disconnect batteries.

5. Before discarding machine:

The batteries must be removed and properly disposed of.

!! Safety Precautions!!

Warning: Hazardous voltage. Shock, burns or electrocution can result. Always disconnect the batteries before servicing machine.

Warning: Batteries emit hydrogen gases, explosion or fire can result. Keep sparks and open flames away.

Warning: Charge unit in a well ventilated area, and keep battery compartment open when charging. Explosion or fire could result.

Warning: Battery acid can cause burns. Wear protective eye wear and gloves when servicing batteries.

Warning: Do not store outdoors or pressure wash. Prevent from getting electronic components wet.

Warning: The use of parts and solutions other than recommended by the manufacturer may cause damage or endanger people.

Warning: Dress safely. Do not wear rings or metal wrist watches while working on this machine. They can cause an electrical short, which can cause serious burns. Do not work on this machine while wearing a tie, scarf or other loose, dangling neckwear or clothing. These loose items can tangle in the rotating parts and cause serious injury or even death.

Warning: Do not use the machine as a step ladder or chair.

Warning: Only operate this machine from the operator's seat. It was not designed to carry passengers.

Warning: Do not operate this machine on ramps or uneven surfaces. When climbing a ramp, always drive the machine in forward straight up or down the ramp. Never drive across the incline. Do not back down or turn on ramps!

Warning: Do not attempt to push or pull the machine without first manually overiding the parking brake and disconnecting both leads to the traction motor.

Warning: Always use the charger provided by the manufacturer to charge the machine. It is an automatic charger, specifically designed to charge at the appropriate rate. If you must use a different charger, disconnect the batteries before charging. This will prevent damage to the electronic speed controller.

Warning: Understand the dynamic braking system before you operate the machine on ramps. Machine does not coast. Releasing the foot pedal will automatically apply braking force, and stop the machine.

Warning: Do not park the machine on ramps or slopes. The machine has a parking brake, but it is recommended that it is always parked on level ground.

Warning: Do not operate the machine if any parts have been removed or damaged.

Warning: Do not remove, paint over, or destroy warning decals. If warning decals become damaged, they must be replaced.

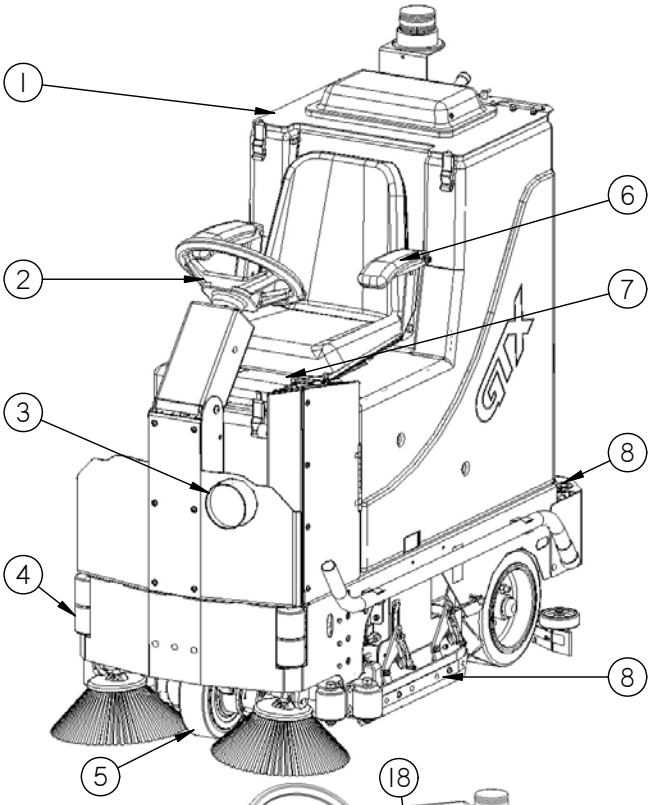
Warning: Do not operate machine in unsafe condition. If the machine is in need of repair or is in any way unsafe to operate, the matter should be reported immediately to the shift supervisor. Do not operate the machine until it is returned to proper operating condition.

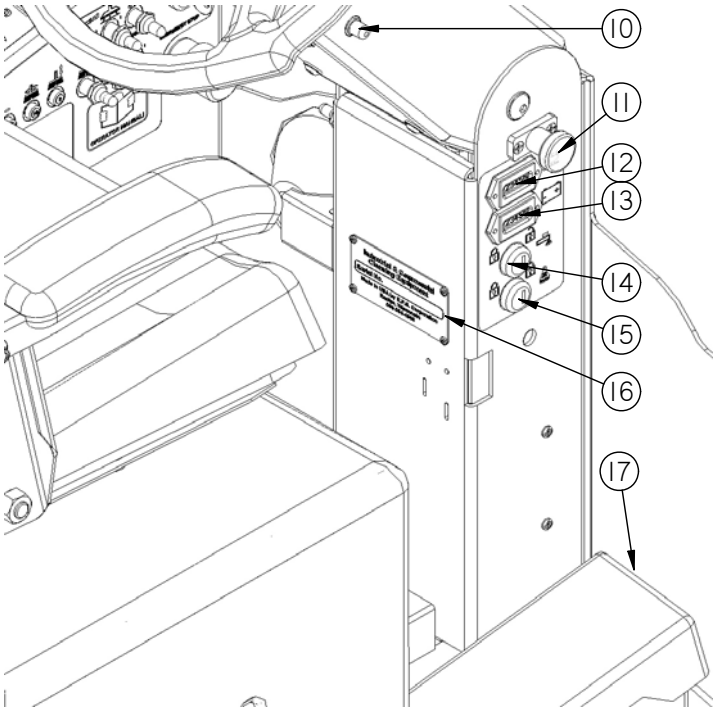
Warning: This machine must only be operated by trained operator. As part of his or her training, they must read this manual thoroughly. If extra copies are needed, contact your local dealer.

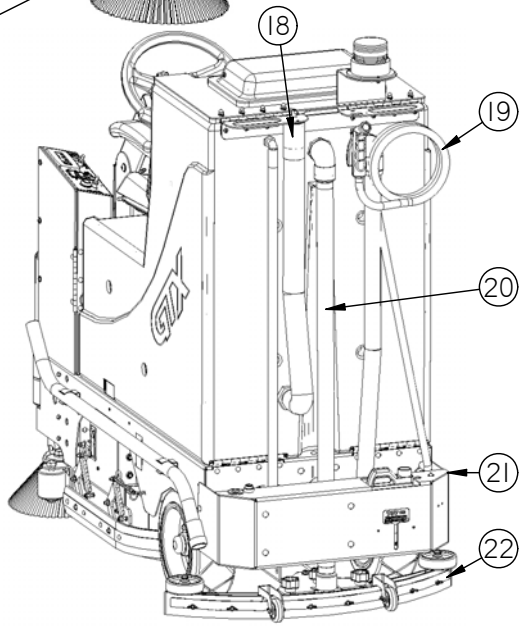
Warning: Always turn off the machine, before leaving it unattended.

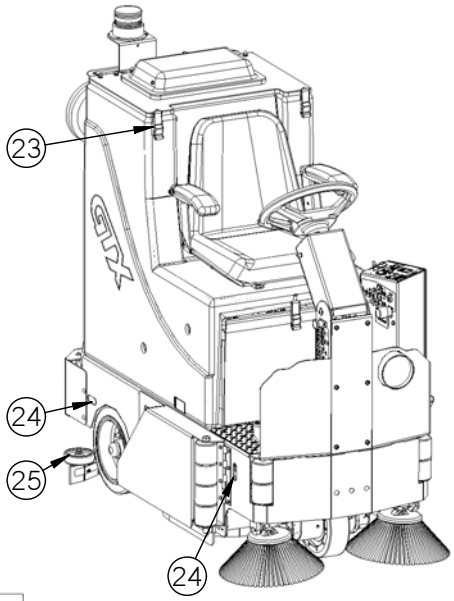
Warning: Do not operate over electrical floor outlets, may result in serious injury.

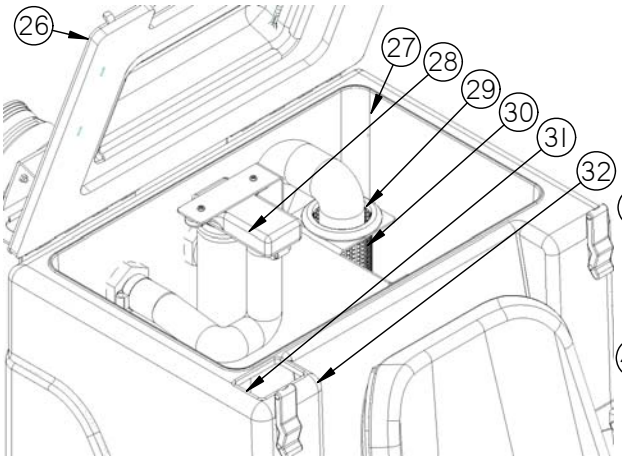
Machine Controls and Features

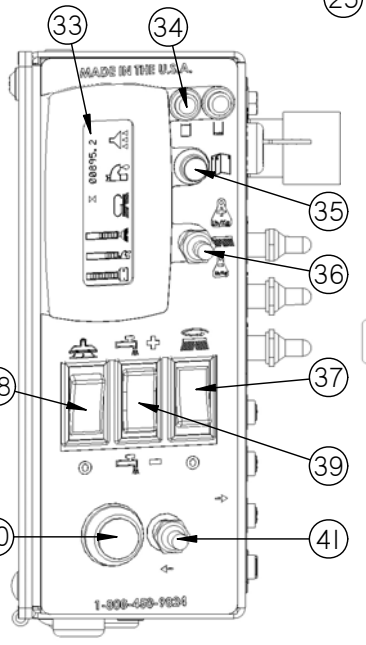


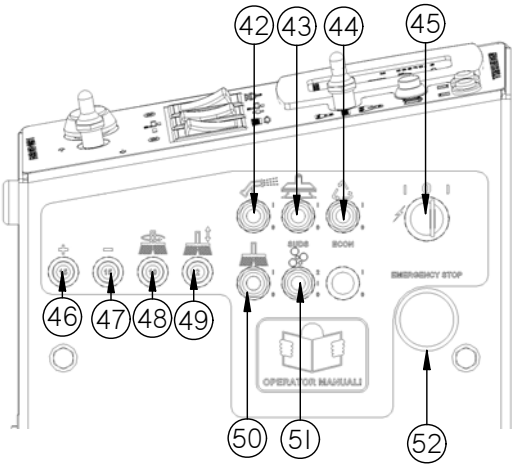












Controls and Functions

1. Recovery tank lid: latch must be secured for recovery tank to seal properly.
2. Steering wheel: steers the machine.
3. Headlight: helps you see in low light areas and to warn oncoming traffic.
4. Polyurethane rollers: helps prevent damage to machine and objects you may drive close to.
5. Front drive tire: (black standard), (grey optional) drives and steers machine.
6. Adjustable seat with arm rests: your machine is equipped with an adjustable seat with arm rests.
7. Seat adjustment: permits the seat to be adjusted forward and backward for operator comfort
8. On board charger plug (optional): plugs into any three pronged outlet to charge machine
9. Side wipers: controls water on turns by directing it to the squeegee.

10. Horn button: sounds the horn for warning oncoming traffic.
11. Adjustable steering: four settings for operator comfort and ease of entry.
12. Machine hour meter: keeps track of total hours of use on the machine.
13. Battery hour meter: keeps track of total hours of use on the batteries.
14. Water control lockout: locks out the solution flow control so it cannot be changed.
15. Down pressure lockout: locks out the scrub deck down pressure so it cannot be changed.
16. Serial # plate: machines have individual serial number stamped on it.
17. Foot pedal: controls the acceleration and deceleration of the machine.

18. Recovery drain hose: allows for controlled draining of recovery tank dirty water.
19. Spray hose: (optional) permits cleaning in remote areas.
20. Squeegee/vac hose: vacuumizes squeegee. Note: keep free and clear of blockage.
21. Rear bumper: offers squeegee system protection from damage.
22. Squeegee blade: squeegees water to be recovered by the vacuum hose.

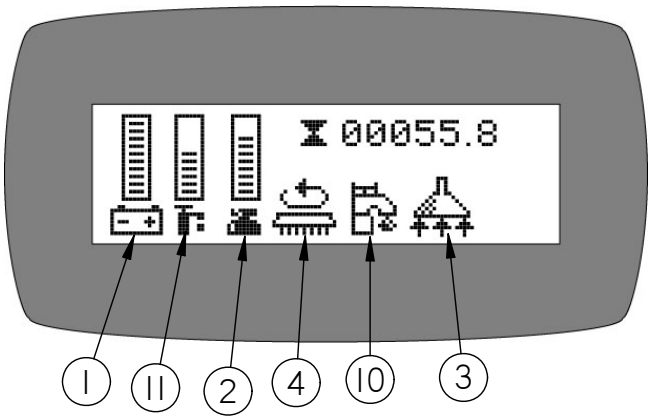
23. Tank latch: permits access to recovery tank.
24. Tie down points: location for tie down straps during transport.
25. Squeegee rollers: help protect the squeegee.

26. Recovery access door: used for flushing out recovery tank with fresh water.
27. Recovery tank: holds approximately 35- gallons of dirty "recovery" water.
28. Vacuum screen box: houses the dual stainless vac screen & shutoff balls.
29. Foam protection screen: used to protect vacuum motor from debris.
30. Drain saver: prevents debris from clogging drain.
31. Solution tank: holds approximately 35-gallons of clean water.
32. Solution tank vent: prevents vacuum from forming in the tank during operation.

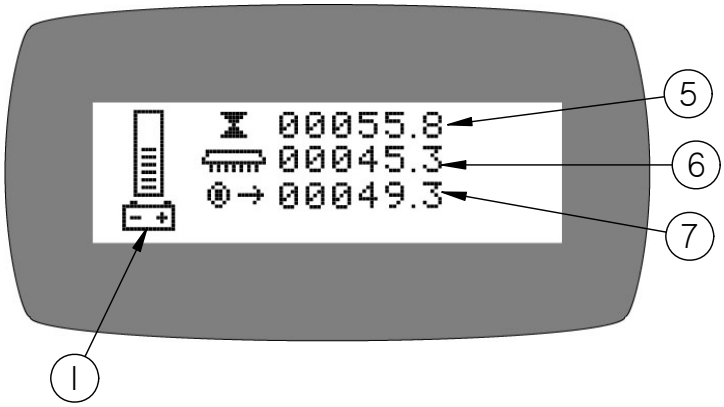
33. Lcd screen: lists functions and setting of the machine. (see page 9)
34. High water recovery light (red): indicates when the recovery tank is nearly full.
35. Menu control: scrolls through different options on the LCD display.
36. Scrub deck down pressure switch: controls the pressure put on the scrub deck.
37. Scrub deck switch: raises and lowers the scrub deck.
38. Squeegee switch: raises and lowers the squeegee.
39. Solution flow control switch: push down to reduce & up to increase flow.
40. "uni-touch" button: activates brushes, squeegee, and solution flow simultaneously.
41. Forward/reverse switch (red): controls the direction of the traction motor.
42. Spray jet (blue): *(optional)* activates spray pump for remote spray wand.
43. Vacuum switch (white): for use with remote vacuum wand.
44. Econ switch:
45. Key switch: turns the main power on and off.
46. Circuit breaker: (15 amp) positive bus bar.
47. Circuit breaker: (15 amp) negative bus bar.
48. Circuit breaker: (10 amp) side broom motors.
49. Circuit breaker: (2 amp) side broom lift actuator.
50. Side broom (yellow): lifts and lowers side brooms which turn on automatically.
51. Suds switch:
52. Emergency stop: shuts machine down in a emergency

LCD Screen Menu Displays

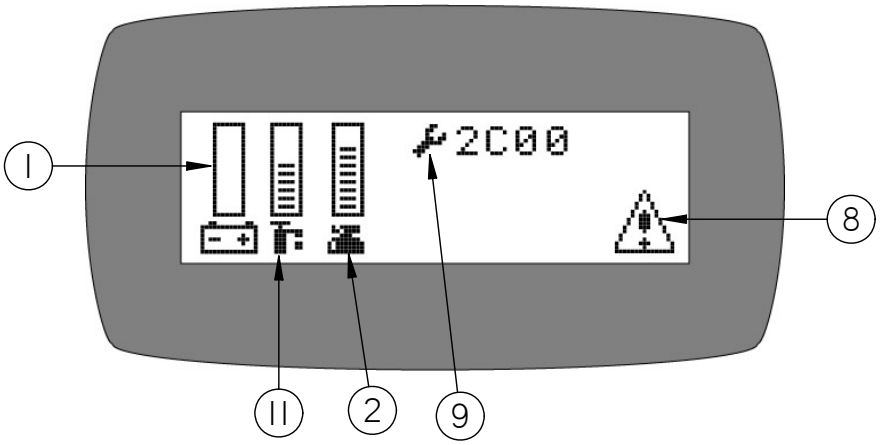
SCREEN # 1 (Operator)



SCREEN #3 (Maintenance)



SCREEN W/ERROR CODE

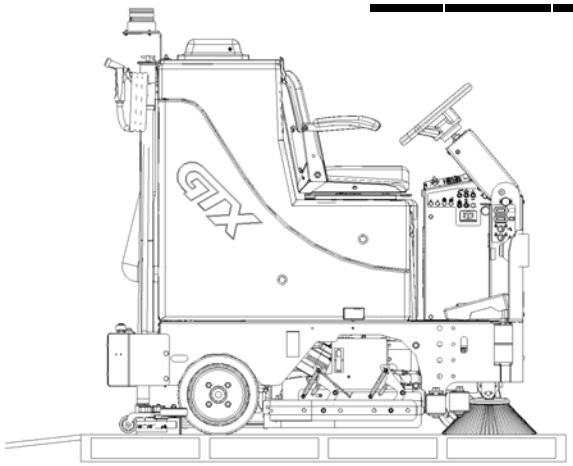


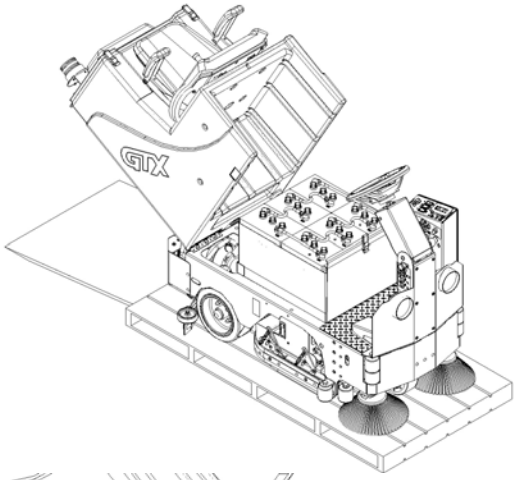
*****Use green menu selection button on control panel to change screens*****

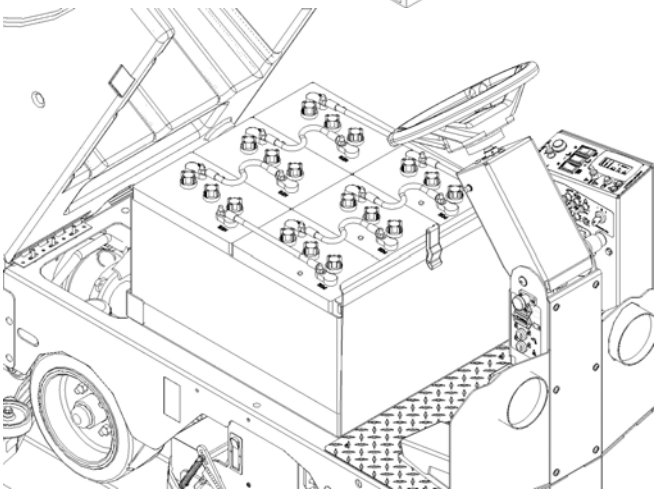
1. **Battery level indicator** - Indicates the energy level remaining in the batteries. *(Shown on all menu displays)*
2. **Scrubdeck down pressure gauge** - Sets the down pressure on the brushes.
3. **Vacuum on** - Indicates the vacuum is "on".
4. **Scrub motors on** - Indicates the brush motors are "running".
5. **Key switch hour meter** - Tells you the total hours the machine has been on.
6. **Scrub brush hour meter** - Tells you the total hours the brush motors have been used.
7. **Transport hour meter** - Tells you the total hours the drive system has been used.
8. **Error warning symbol** - Indicates when there has been a diagnostic code error.
9. **Diagnostic code** - When the machine has detected an error it will display the warning symbol and a diagnostic code which tells you what's wrong.
10. **Water on** - Indicates the solution flow is "on"
11. **Solution level** - Indicates the gallons per minute (G.P.M) 0 - 1.0 .

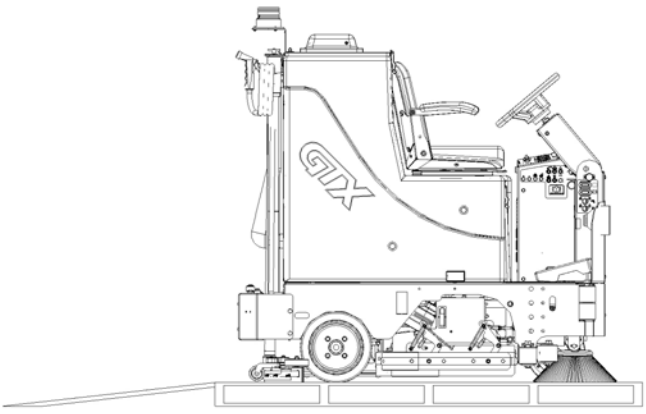
(For common error codes and descriptions see pages 31. AND 32.)

Machine Setup









Uncrating Machine and Connecting Batteries

1. Carefully check the crate for any signs of damage. Batteries are in the unit.

2. To uncrate the machine, remove banding from around the crate. Take off the top and sides and dispose of properly.

3. Remove banding from machine. Remove the chocks around the drive wheels.

4. Turn all switches to the off position and remove key.

5. Tip back tank to expose the battery compartment and check to see that the battery cables are connected.

A standard machine is equipped with (6) 6-volt, deep cycle, 245 ah batteries, which form a 36 volt system. Maximum battery dimensions are 7-1/8"W x 12-1/4"L x 13-1/4"H.

6. Verify that all of the battery cables are connected to the batteries tightly. Locate any loose ones and connect to the open terminal. Tighten with 1/2" wrench. **(DO NOT OVER TIGHTEN!) Batteries are heavy but easily damaged.** Put covers in place. ***(See picture to the left)***

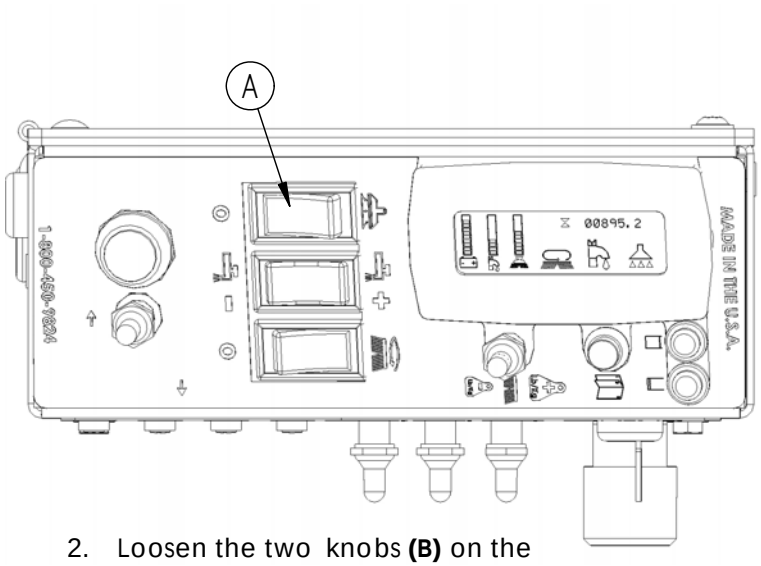
7. Turn on main power switch and check the battery condition meter to ensure correct installation.

8. Fold down ramp, and drive machine off of the base.

Notify the carrier immediately if concealed damage is discovered.

Attaching Squeegee

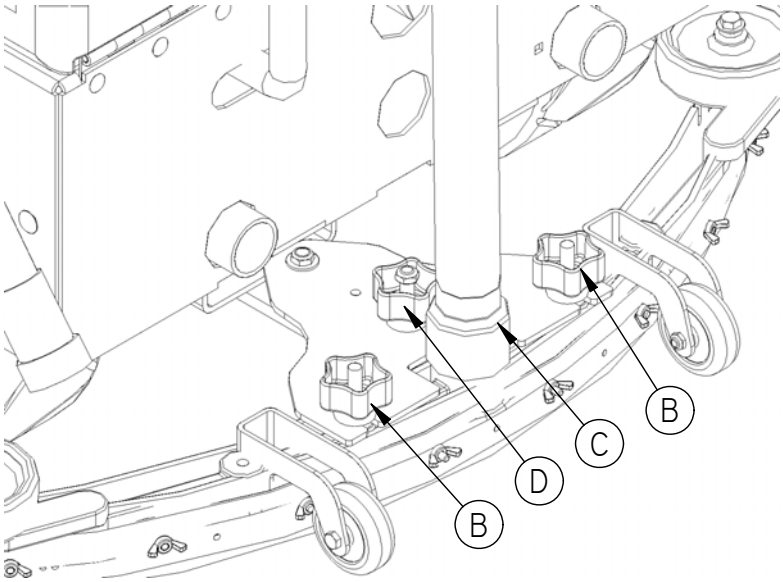
1. Lower the squeegee mounting plate by depressing the squeegee switch **(A)** to the down position. ***(See picture below)***



2. Loosen the two knobs **(B)** on the squeegee and slide them into the slots in the squeegee mounting plate. ***(See picture below)***

3. Tighten the two knobs **(B)** and connect vacuum hose **(C)** from the machine to the squeegee.
(See picture below)

4. You may have to adjust the squeegee pitch by turning the pitch adjustment knob **(D)**.
(See picture below)



5. Note vac exhaust, dual vac out
*assists in drying ***(See picture above)***

Removing Squeegee

1. With the squeegee in the down position, turn key switch off & remove key.

2. Disconnect vacuum hose from squeegee and loosen the (2) knobs.

3. Pull squeegee assembly rearward from the lifting carrier.

4. Inspect or repair as necessary and reinstall.

Replacing or Rotate Squeegee Blades

For safety: before leaving or servicing the machine, stop on a level surface, turn off machine, and remove key.

1. Remove the squeegee assembly from the machine. Remove blade retainer strap and remove squeegee blade

2. Rotate the squeegee to new edge position or replace as required.

3. Install blade on the locating pins of squeegee assembly.

4. Install squeegee retainer strap.

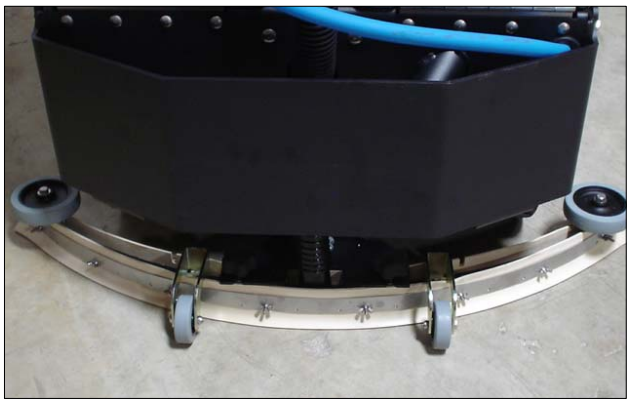
5. Fasten and lock knobs.

Adjusting Squeegee

1. Turning adjustment knob clock-wise (tightening) will raise tips & lower the center of the squeegee.
(SEE PICTURE TO THE LEFT)

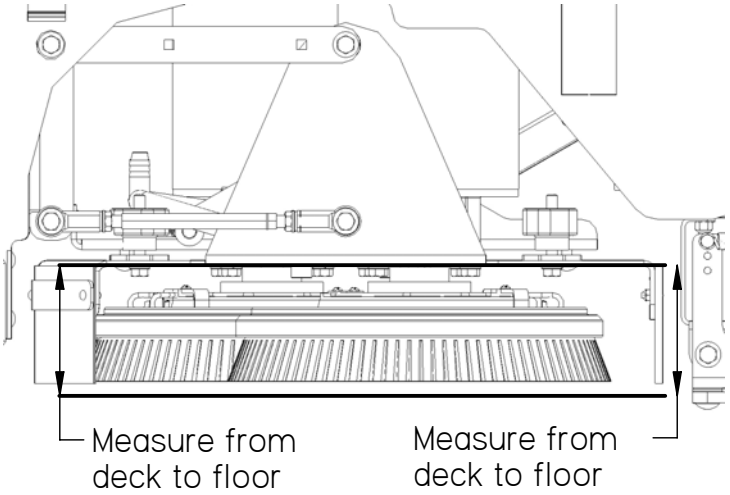
2. This squeegee is adjusted too far back and will not pick up on the outer tips of the squeegee.
Note: the tips of the squeegee are off the floor.
(SEE PICTURE TO THE LEFT)

3. This squeegee is adjusted too far forward and will not pick up in the center .
****Note: center of the rear blade is spaced off the floor.***
(SEE PICTURE TO THE LEFT)



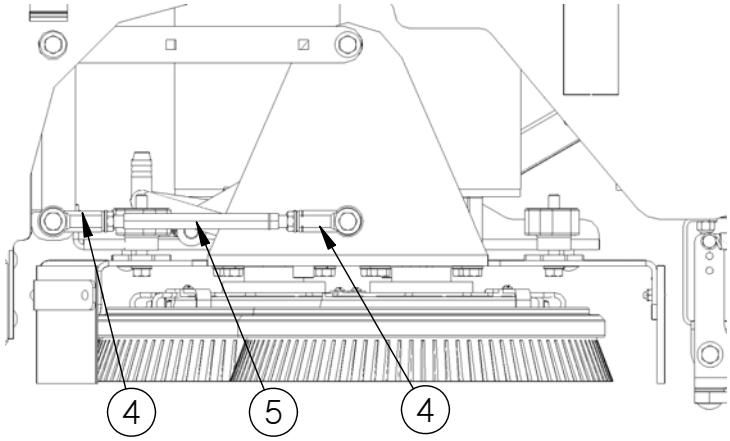
4. This squeegee is adjusted just right with good deflection across the entire rear blade.
(SEE PICTURE TO THE LEFT)

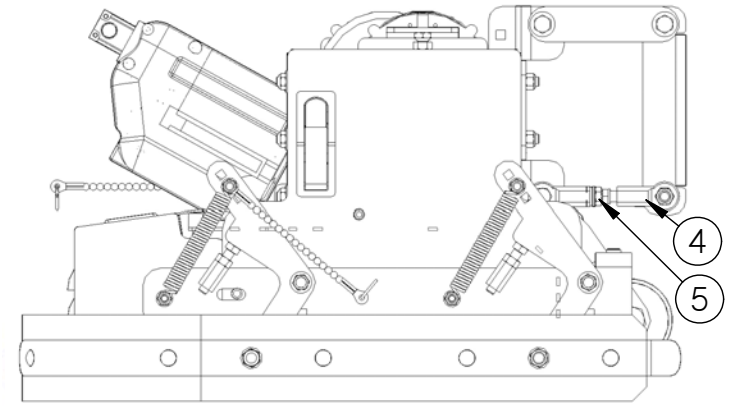
Leveling Scrubdecks



Leveling Disk Scrubdeck

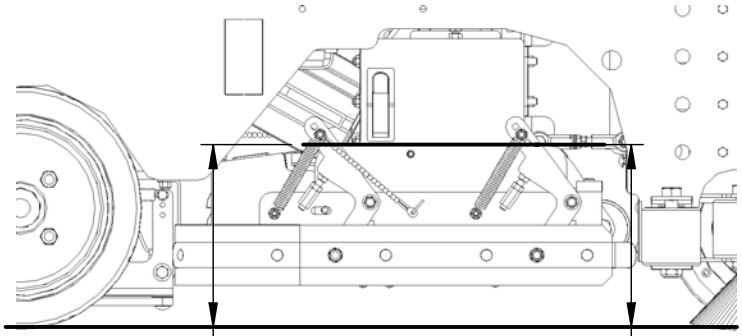
1. Drive machine to a flat level surface and turn machine off. ***(See picture to the left)***
2. Deck should be raised off the floor.
3. With the shrouds off, measure from the ground to a parallel surface on all four corners of the scrubdeck. ***(See picture to the left)***
3. If the measurements are not the same the deck is not level and needs to be adjusted.
4. Loosen the (2) locking nuts **(4)** and adjust the hexagonal arm **(5)**. ***(See picture to the left)***
5. Extending the adjustable arms raises the front and lowers the rear of the scrubdeck. Measure & Retighten. ***(See picture to the left)***



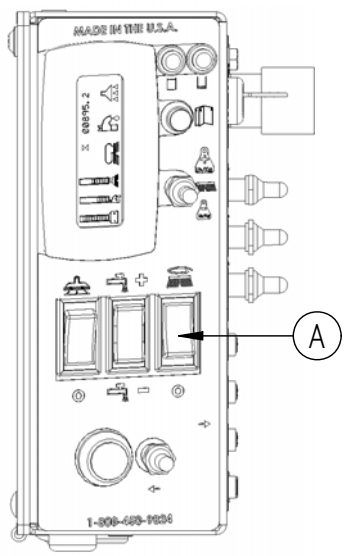


Leveling Cylindrical Scrubdeck

1. Drive machine to a flat level surface and turn machine off.
2. Raise the deck off the floor.
3. Measure from the ground to a parallel edge on all four corners of the scrubdeck.
4. If the measurements are not the same the deck is not level and needs to be adjusted.
5. Loosen the locking nut **(4)** and turn the hexagonal arm **(5)** on each side of the scrubdeck to level it. ***(See picture to the left)***
6. Extending the adjustable arm raises the front and lowers the rear of the scrubdeck. Measure & Retighten. ***(See picture to the left)***

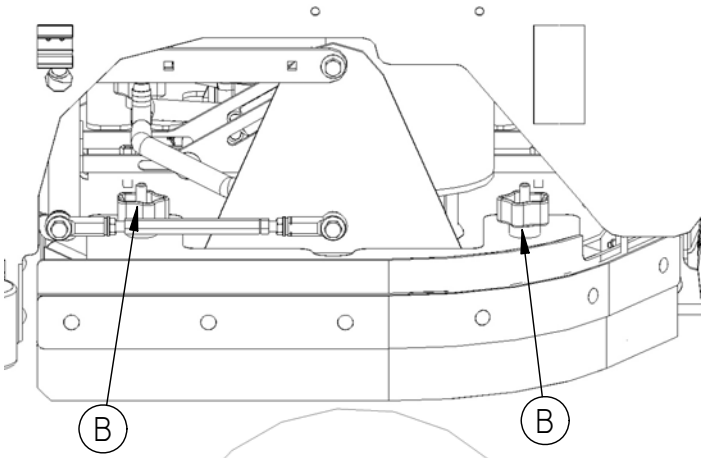


Attaching Disk Brushes/Pads

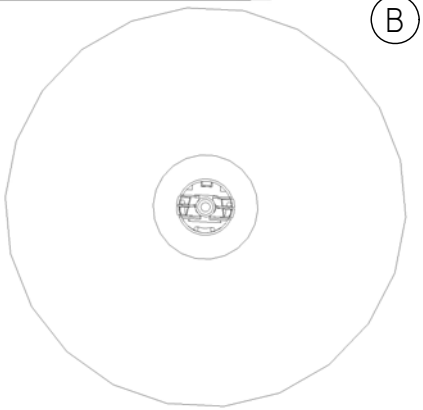


1. Turn "on" machine power.

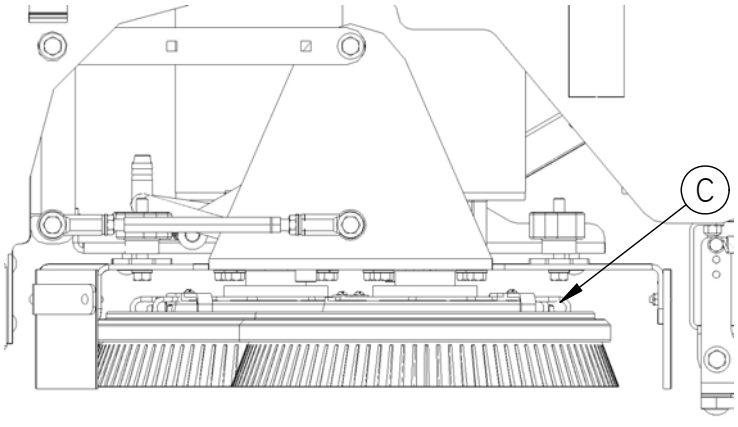
2. Raise the scrub deck by depressing the brush switch **(A)** to the **("0")** position and turn machine power "off". Disconnect batteries. ***(See picture to the left)***



3. Loosen knobs **(B)** and remove shrouds to access scrub deck ***(See picture to the left)***



4. Attach pads to pad drivers before connecting pad drivers to motor hub. ***(See picture to the left)***

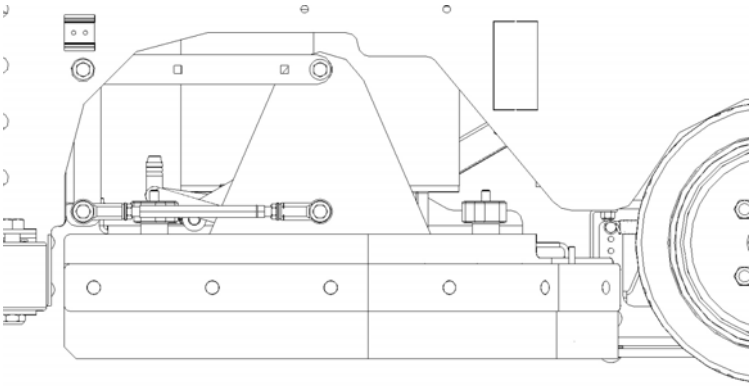


5. Attach brushes or pads to motor hubs. squeeze the scissor locking device **(C)** and lift brush up on to the motor drive hub. Make sure the scissors close and lock once the brushes are on. ***(See picture to the left)***

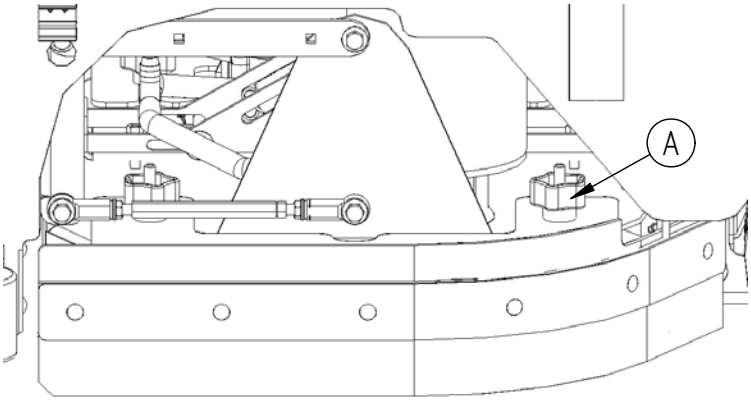
6. When brushes are attached put shrouds back on machine and tighten knobs.

******FOR CORRECT PAD APPLICATION , CALL YOUR LOCAL DEALER******

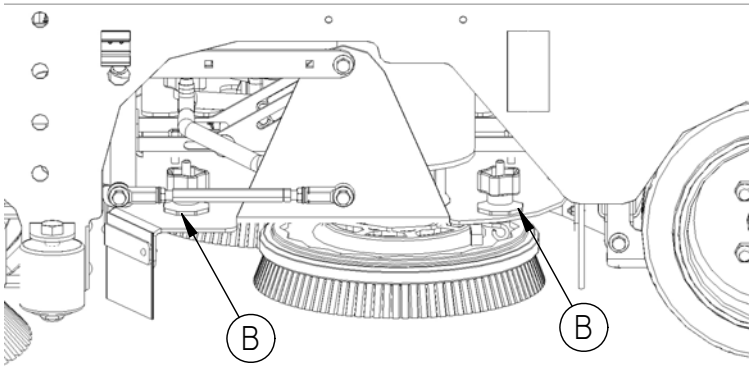
Adjusting Shrouds



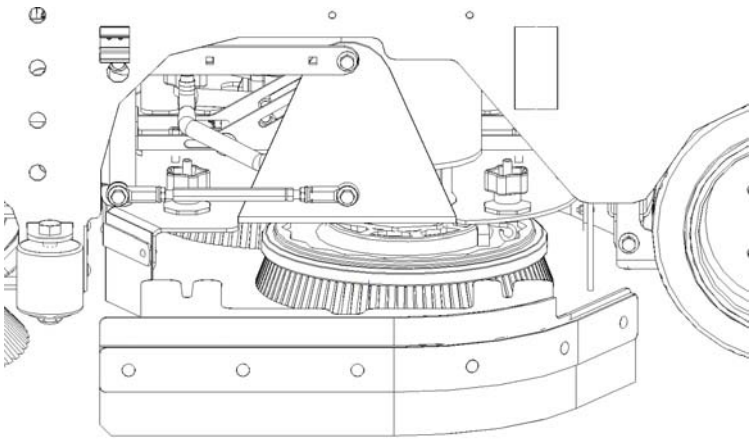
1. The shroud must be adjusted correctly in order to have proper water control during turns. the front of the shroud should be slightly higher than the rear. ***(See picture to the left)***



2. To adjust shrouds loosen knobs **(A)** and remove shroud. ***(See picture to the left)***

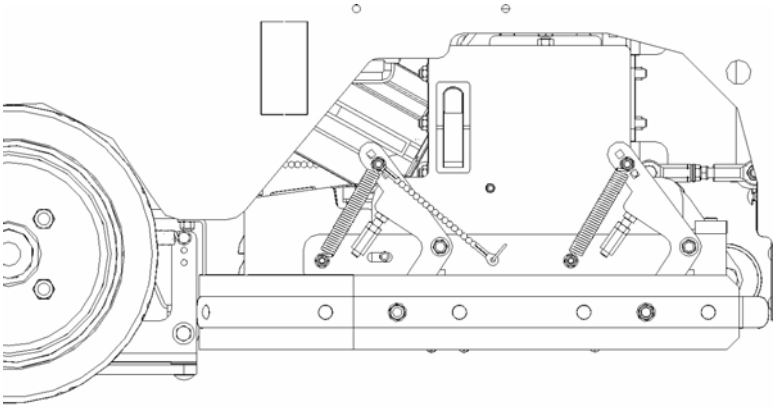


3. Spin the RED shroud support **(B)** up or down to get adjustments. ***(See picture to the left)***

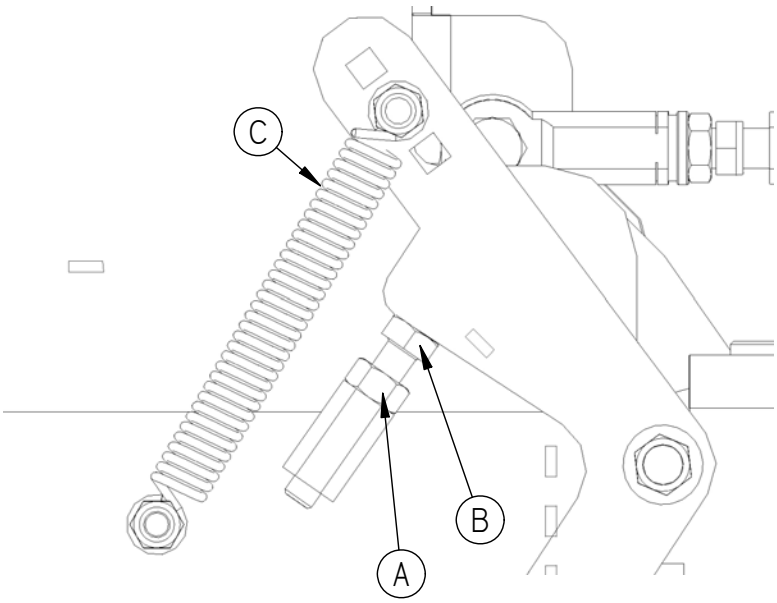


4. Once adjusted to the proper height put the shrouds back on top of adjustment supports and tighten knobs back down. ***(See picture to the left)***

Adjusting Cylindrical Side Wipers



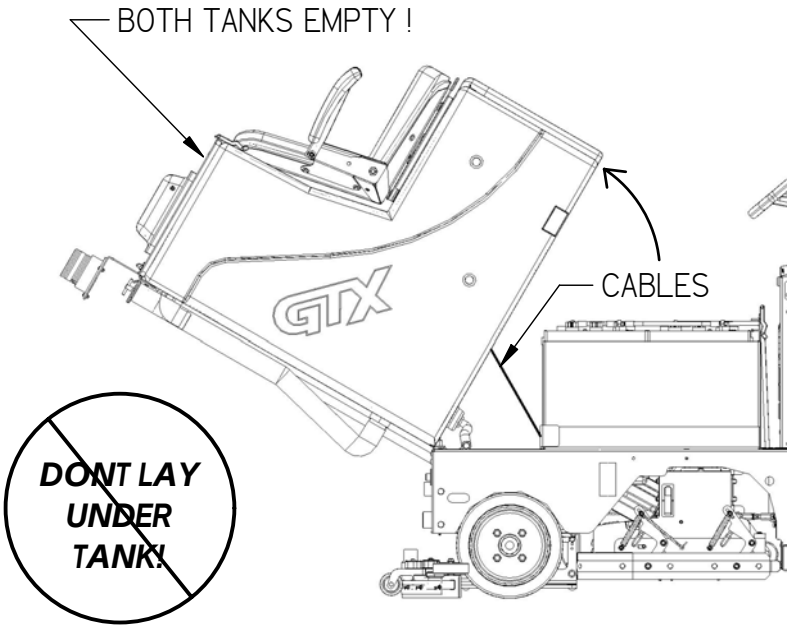
1. The cylindrical deck comes euipped with side wipers for increased water control when turning.
(See picture to the left)



2. To adjust the side wipers, first loosen the locking nut **(A)**, then turn the adjusting screw **(B)** in to raise or out to lower the height of the side wiper blade. The spring **(C)** provides tension during adjustment.
(See picture to the left)

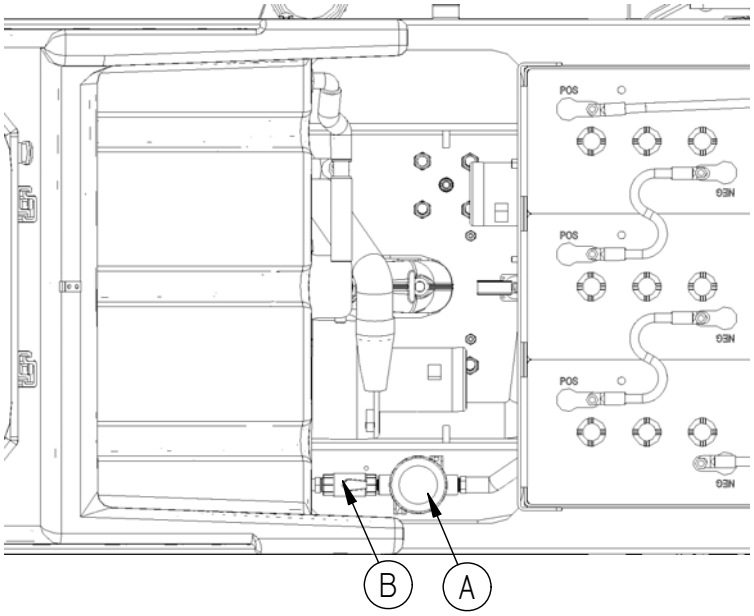
4. A properly adjusted side wiper will have slight blade deflection on the floor when turning.
(See picture to the left)

Solution System

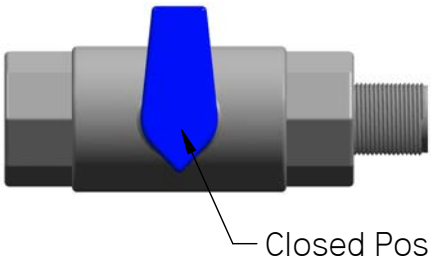


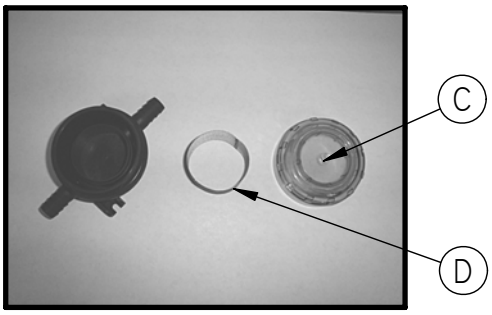
1. To access the items listed below, completely drain solution and recovery tanks ***(See picture to the left)***

I. Carefully tip the tank back until it is supported by the strap.
II. Gate Valve
III. Stainless steel inline filter
IV. Solution Flow Valve



2. To clean filter **(A)** close gate valve **(B)**. ***(See pictures to the left & below)***

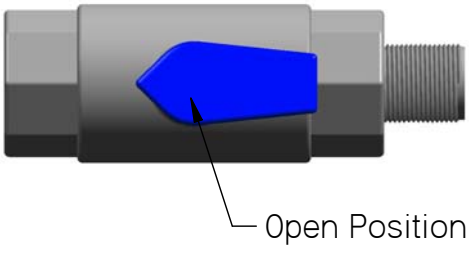


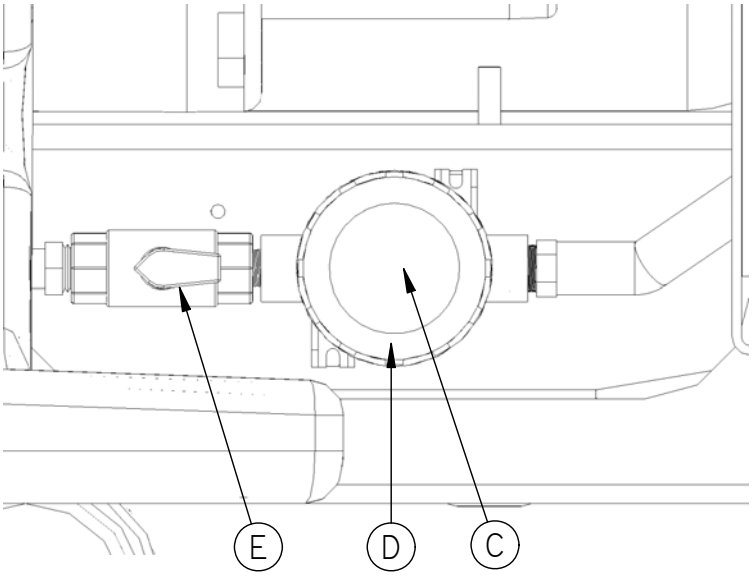


3. Unscrew clear lid **(C)**, remove stainless steel screen **(D)**, rinse screen. ***(See pictures above & to the left)***

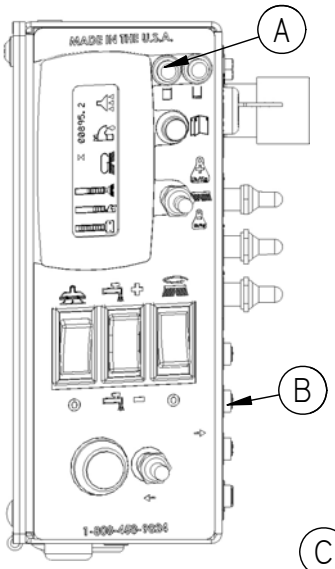
4. Reinstall stainless filter screen & tighten cap.

5. Open gate valve ***(E)*** ***(See pictures to the left & below)***





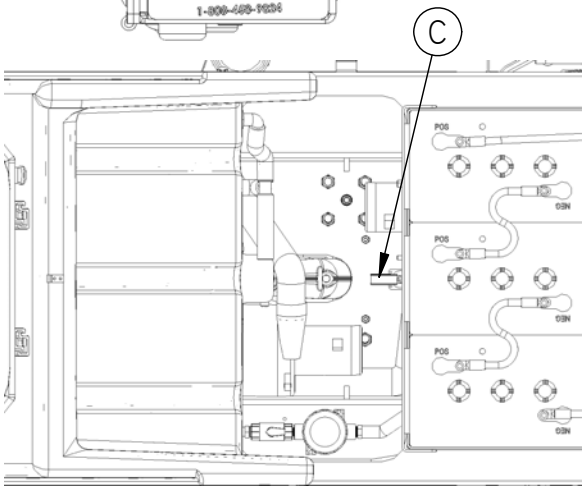
Vac System



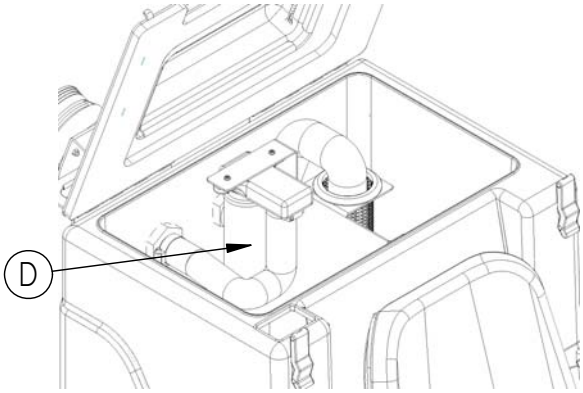
1. The "high recovery" light **(A)** ***(red)*** will illuminate and the horn will sound when the recovery tank is full. Stop immediately and drain the recovery tank. ***(See picture to the left)***

2. If the red light is ignored the vac motor will overheat.

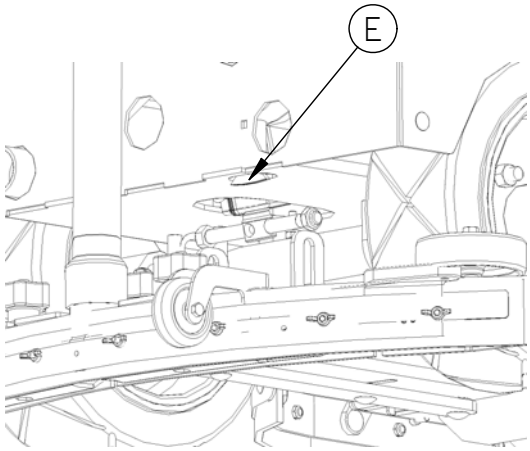
3. If the vac motor is pulling excessive current, circuit breaker **(B)** (50 amps) may blow to prevent damage. If this occurs contact your service agent.



4. Vac switch ***(C)*** is set to engage at 45-50" of lift.



5. If foam or water gets past the recovery tank ***"vac screen/ball system" (D)*** the ***"unloader valve" (E)*** will drain it from the vac box. ***(See picture to the left and picture below)***



6. ***"Unloader valve" (E)*** is located on the bottom of the vacuum box in front of the vac motor. ***(See picture to the left)***

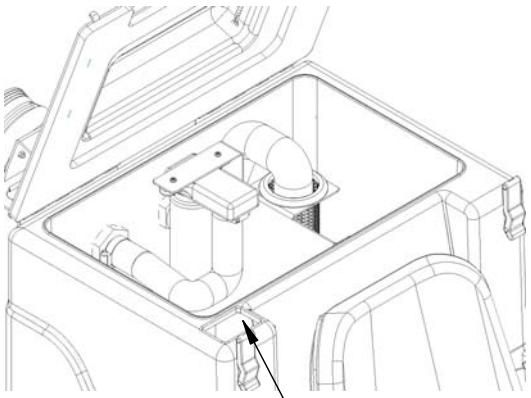
Operation

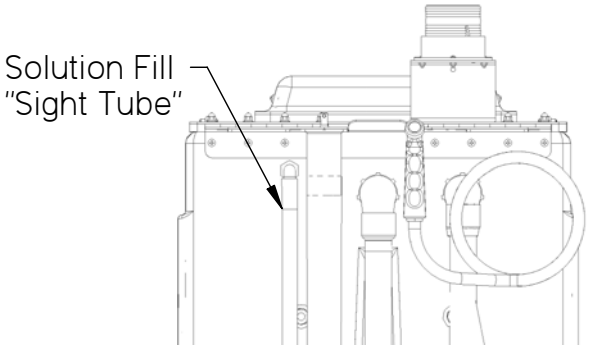
Pre-cleaning check list

Read and understand the safety section on page 5 and 6 before operating machine.

1. Check battery condition gauge on the Central Command II LCD screen. Make sure batteries are fully charged before using.
2. Check the condition of pads or brushes.
3. Check the condition of the squeegee blades.
4. Transport the machine to the filling station. Raise the scrub head and squeegee when transporting.
5. Turn machine off.
6. Open solution fill door on the top of the tank and fill the tank up with clean water or **"approved"** detergent. For help call Powercat Solutions at 414-745-9337. Foam in the recovery tank is usually an indication of excessive soap. ***(See picture below.)***
7. Add cleaning chemical. Use the proper dilution ratio indicated on the bottle.

Note: Use only nonflammable commercial cleaning chemicals.

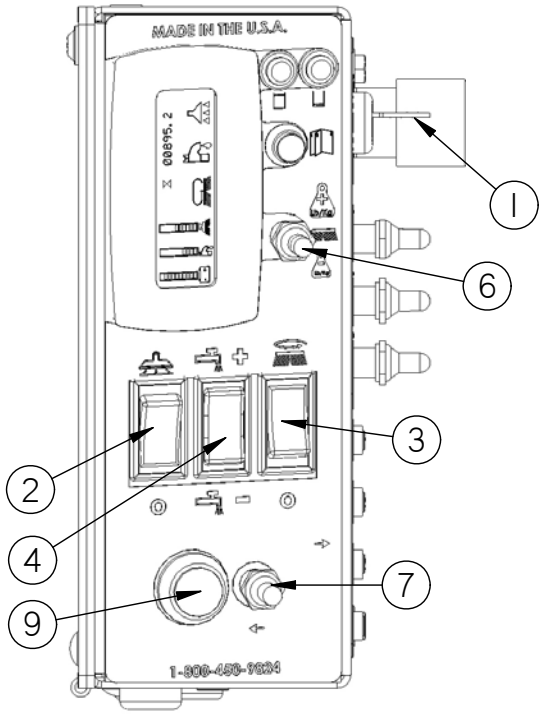




One pass scrubbing

Steps: (see picture below)

1. Turn machine on with the key switch.
2. Lower squeegee by pressing the switch.
3. Lower scrub head to the floor, use the top half of the brush switch.
4. Adjust the solution +/- to the desired setting. (start at half way).
5. Begin scrubbing by depressing the foot pedal slowly and then to the speed required. (Not shown)
6. Start scrubbing at the #1 or # 2 marks, do not use the #4 or #5 marks without management's approval.
7. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
8. To stop the machine, let off of the foot pedal and the machine will stop automatically. (Not shown)
9. Depressing the ***"uni-touch"*** button activates the solution, vacuum, and brushes simultaneously.

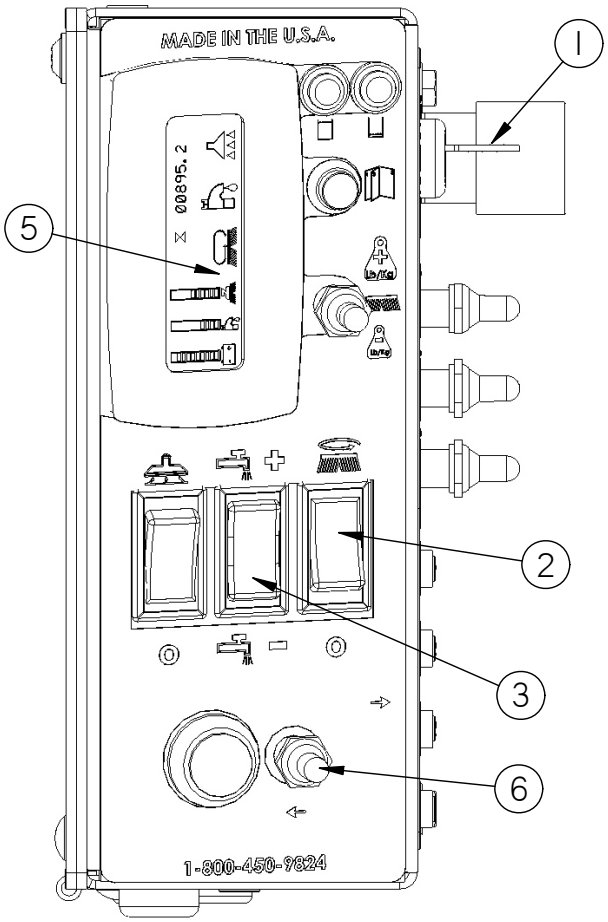


Operation

Double Scrubbing

Steps: (see picture below)

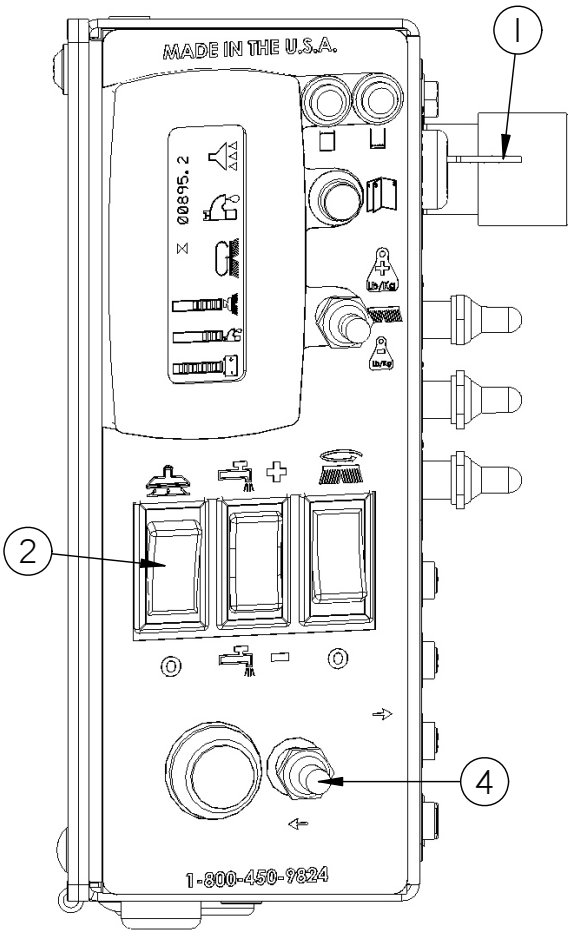
1. Turn machine on with the key switch.
2. Lower scrub head to the floor, use the top half of the brush switch.
3. Adjust the solution to the desired setting. ***(set half way)***
4. Begin scrubbing by depressing the foot pedal slowly and then to the speed required. ***(Not shown)***
5. Start scrubbing at the #1 or # 2 marks, do not use the #4 or #5 marks without management's approval.
6. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
7. To stop the machine, let off of the foot pedal, and the machine will stop automatically. ***(Not shown)***



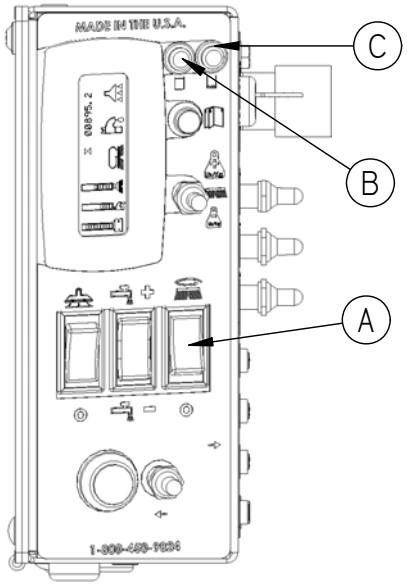
Vac Only Scrubbing

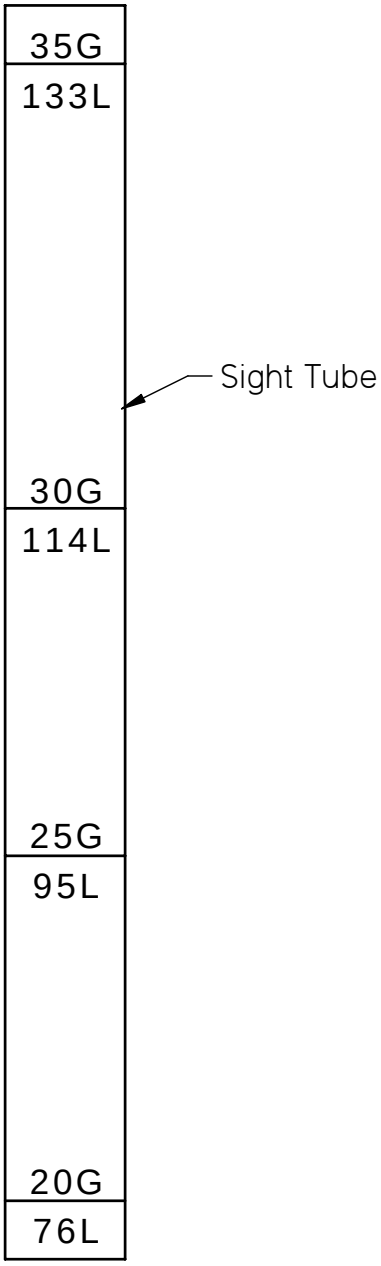
Steps: (see picture below)

1. Turn machine on with the key switch.
2. Lower squeegee by pressing the switch.
3. Begin vacuuming by depressing the foot pedal slowly and then to the speed required. ***(Not shown)***
4. To operate machine in reverse, simply switch the reverse switch to the reverse position, back up alarm may sound and your reverse speed is set to roughly 70% of forward.
5. To stop the machine, let off of the foot pedal, and the machine will stop automatically. ***(Not shown)***



Operating Hints





1. Observe the amount of solution the machine is dispensing on the floor and adjust to the desired flow. To increase the solution flow rate, push ***solution switch (A) +***, to decrease push ***solution switch (A) -***.
(See picture to the left)

2. Keep an eye on the ***"red" recovery full light (B)*** to make sure there is not foamy buildup in the recovery tank. If excess foam begins to develop, pour a recommended foam control solution into the recovery tank.
(See picture to the left)

3. Always operate at lower speeds when scrubbing around walls and objects. You should reduce the speed, to maintain control when turning.

4. If squeegee starts to streak, raise and wipe the blades with a clean cloth. If the problem continues, check the blades for wear or damage, and rotate if needed.

5. Change or turn over pads when dirty. Rotate the scrub brushes every week.

6. Stay clear of objects protruding from the floor, such as sockets, grates, for they will damage the pads and squeegee blades.

7. During brief stops you should turn everything off, the brushes and solution will automatically stop when the foot pedal is released.

8. Always keep an eye on your gauges. They let you know the status of a particular system at a glance. If your battery gauge is reading low, you must stop immediately, and recharge. Running the batteries dead, will result in damage to the batteries.

9. When you run out of solution, raise the brushes, and continue to vacuum the remaining water until it is consumed. The ***"yellow" low solution light (C)*** will light up when the solution is low and the sight tube on the back of the tank tells you how much solution is left in the tank, ***(See picture to the left)***

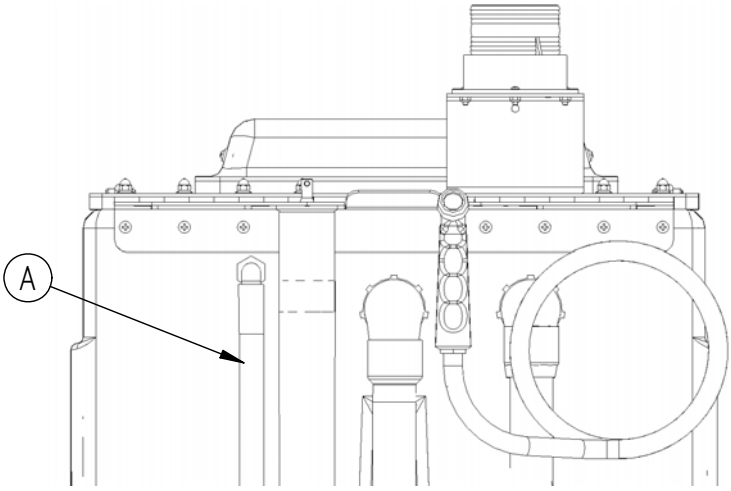
10. When you are ready to stop, pick up the brushes, turn off the solution switch, pick up the squeegee, and drive the machine back to the charging area.

Drain Solution Tank

To drain left over cleaning solution from the solution tank, perform the following steps.

1. Pull the clear sight tube/drain hose **(A)** off barbed fitting. ***(See picture below)***

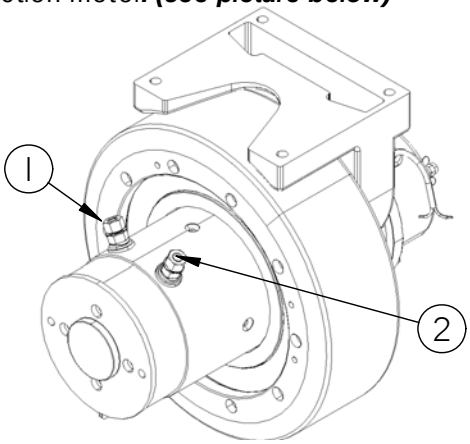
2. Rinse out tank and solution flow system with clean water.



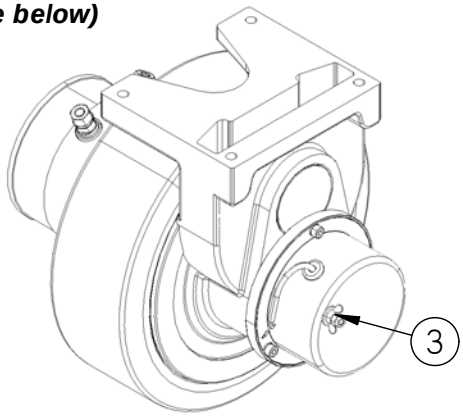
Overide Parking Brake

The parking brake must be released "prior" to attempting to ***"push/pull"*** the machine manually. Perform the following steps in any order.

1. Disconnect both positive and negative leads **(1 & 2)** from the traction motor***. (See picture below)***



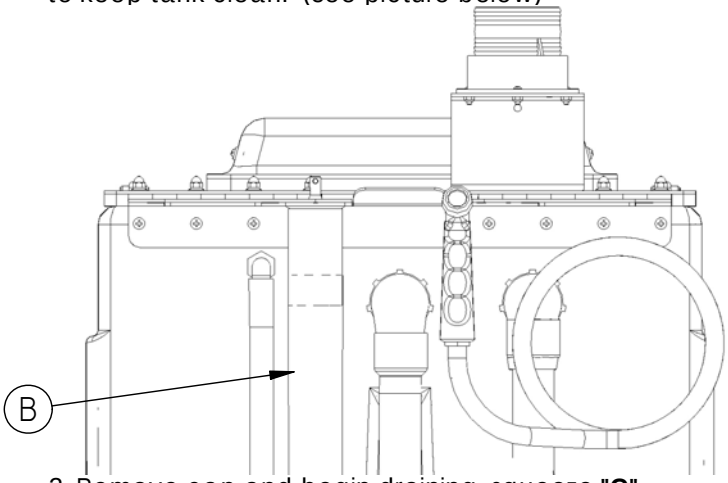
2. Turn wingnut **(3)** clockwise to release the parking brake***.*** ***(See picture below)***



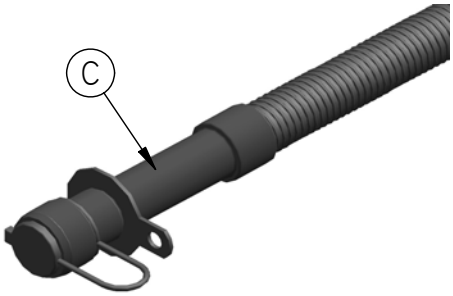
Drain Recovery Tank

Always empty recovery tank when refilling the solution tank. To drain the recovery tank, perform the following steps.

1. Remove drain hose **"B"** and unscrew cap. Open the top "recovery access lid" and flush out with fresh water to keep tank clean. (See picture below)

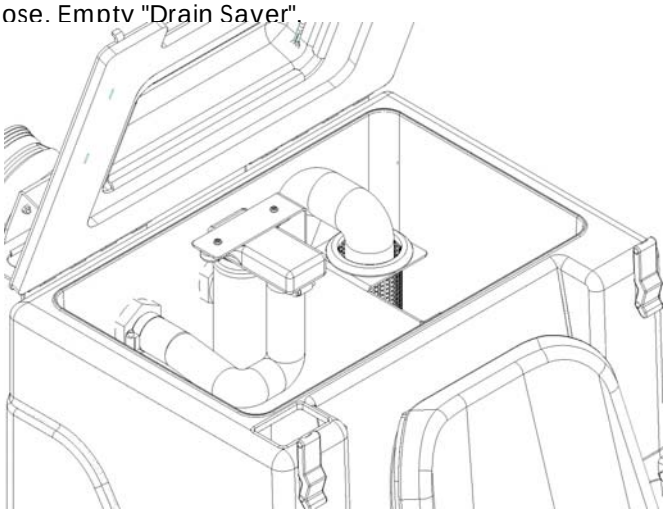


2. Remove cap and begin draining, squeeze **"C"** to control flow. ***(See picture below)***



* It is the customers responsibility to verify that discarded water is in compliance with local, state, and federal laws. **DO NOT DRAIN INTO "STORM DRAINS" !**

3. Open the top "recovery tank lid" and ***flush out*** with fresh water to keep tank clean. Rinse the recovery tank after every use. This will prevent heavy build up on the bottom of the tank, foul odors and clogging of the drain hose. Empty "Drain Saver".

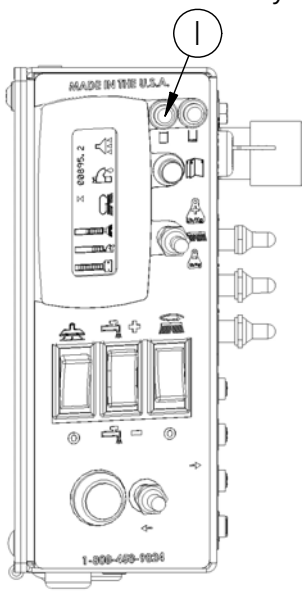


4. Once tank is empty, put the cap back on and place hose back on hook.

Recovery Tank Float Shut-Off

When water is no longer being vacuumed from the floor and the vacuum fan is operating, the ball float has engaged the red high recovery light **(1)** will come on.
(See picture below)

The vacuum motor will not vacuum water with recovery tank full. The recovery tank must be drained

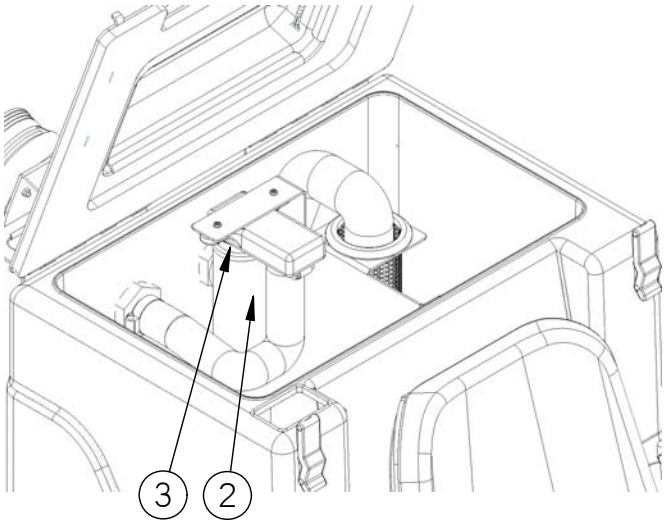


1. The float shut-off **(2)** screen can be cleaned in or out of the machine.

2. To clean the float shut-off while it is inside the machine wipe material off screen then rinse. Check that the ball is also clean and moves freely.

3. To remove the float shut-off, remove the white clamp **(3)** grasp the screen with one hand and pull down to remove.

4. Screens, gaskets, and shutoff balls must be in place.

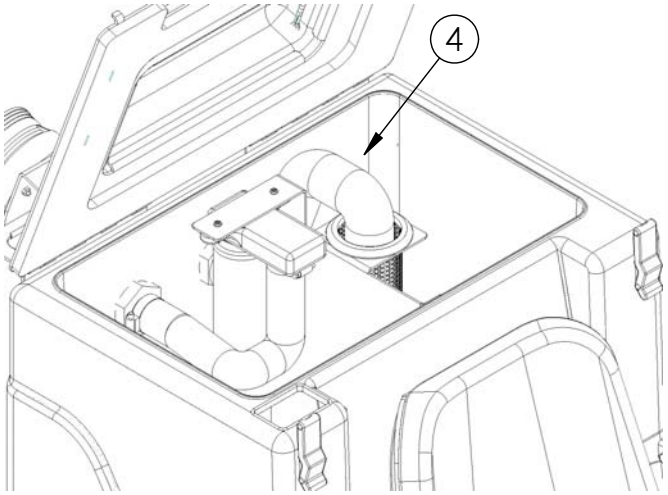


Recovery Tank Drain Saver

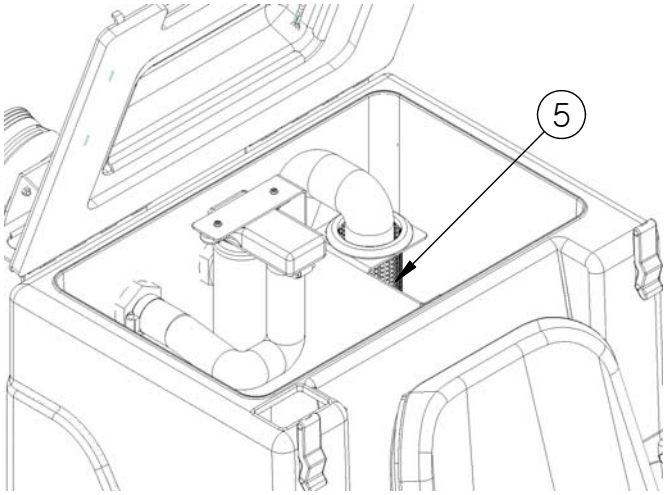
The recovery tank drain saver will help prevent the drain from becoming clogged with debris.

1. The drain saver screen should be emptied and cleaned after you drain the tank.

2. To clean, pull hose **(4)** out of drain saver and remove screen. Empty screen into trash, wipe material off screen and then rinse.



3. When finished place screen back into the recovery tank and re-insert hose into screen **(5)**.

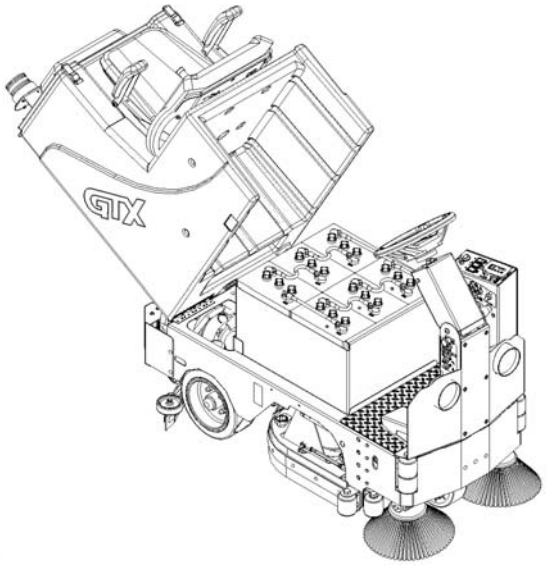


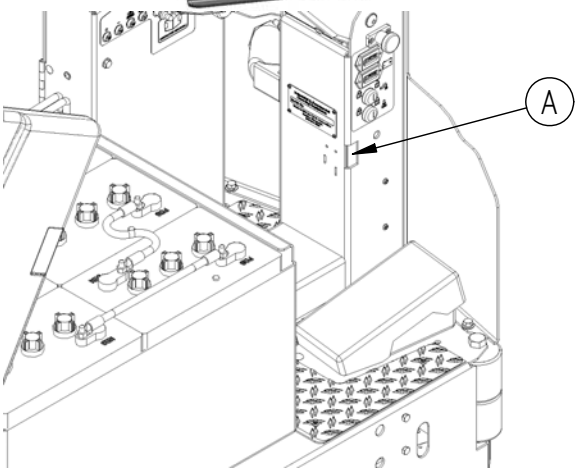
4. The screen saver must always be in place when the machine is in use to prevent clogging of drain.

Standard Battery Charging

Charger Specifications

DC Output voltage of 36 volts. (Standard)
Output current of 25 amps max. (Standard)
Output current of 36 amps max.
(Optional W/325 ah battery upgrade)
AC Input voltage of 110 volts/60 Hz. (standard)
Automatic shut off circuit.
Made for deep cycle batteries.
Danger: always charge batteries in a well ventilated area. Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and flame away. Shield eyes when servicing batteries and avoid contact with battery acid.
Leave access panel open when charging!





Standard Charger

Caution: the following instructions are intended for the 36v charger supplied with the machine. **Do not use any non OEM charger with this machine.**

1. Transport machine to a well ventilated area for charging.

2. Turn the machine off.

3. Hinge opens the tank to expose the batteries. ***(See picture to the left)***

Caution: (always wear eye protection when batteries are exposed)

4. Check the water level in each battery. Do not charge the machine unless the water is slightly higher than the plates. If needed, add enough ***distilled*** water to 1/2" above the plates. Do not over fill. Batteries can overflow during charging. Replace caps before charging.

5. With the grey (50) charger plug disconnected from the machine, plug the charger power cord into a grounded 110 volt standard wall outlet.

6. Connect the grey charger plug into the battery charging port **(A)** located on the seat pedestal.

7. The charger will automatically begin charging, and automatically shut off when fully charged (Check gauge)

8. After the charger has turned off, unplug the grey charger plug from the machine and disconnect the charger from the wall outlet.

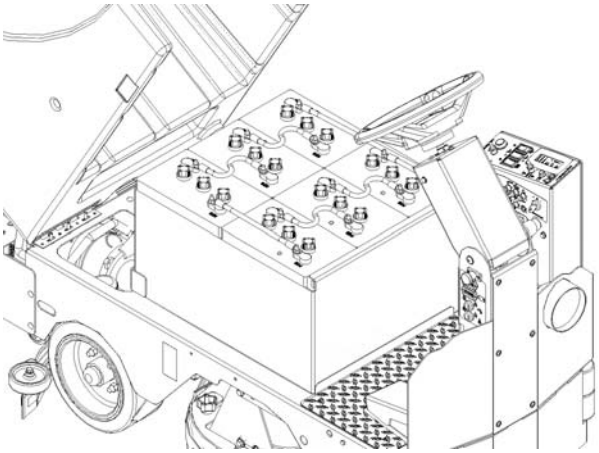
9. Recheck the cell level after charging. If needed, add distilled water up to the correct level. Be certain to replace the caps securely and to wipe off the top of the batteries.

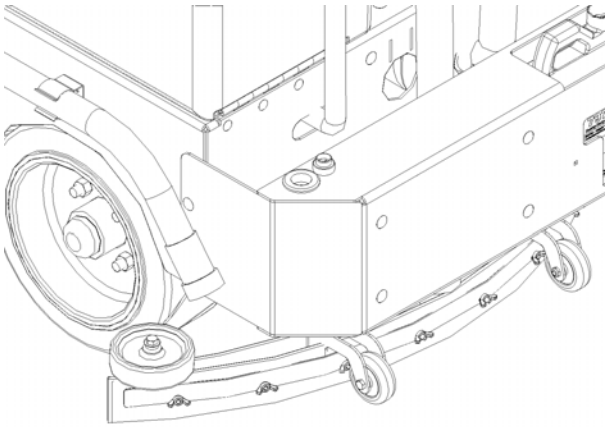
Optional Battery Charging

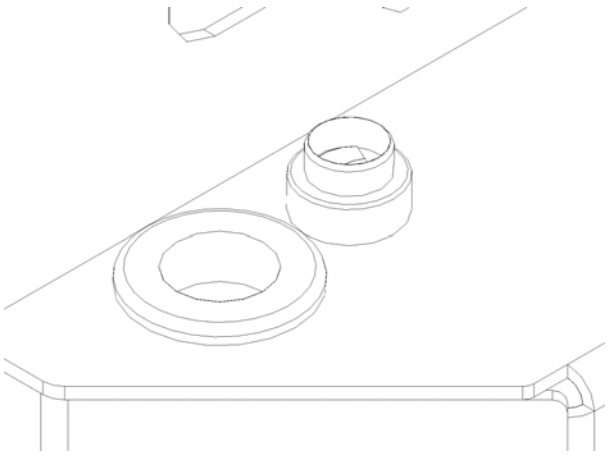
Charger Specifications

Output voltage of 36 volts. (optional)
Output current of 25 amps max.
Input voltage of 110 volts/60 Hz.
Automatic shut off circuit.
Made for deep cycle batteries, wet or sealed.

Danger: always charge batteries in a well ventilated area. Batteries emit hydrogen gas. Explosion or fire can result. Keep sparks and flame away. Shield eyes when servicing batteries and avoid contact with battery acid.
Leave access panel open when charging!







On-Board Charger

Caution: the following instructions are intended for the 36v "optional" on-board charger **(A)**. ***(See left middle picture)***

1. Transport machine to a well ventilated area for charging.

2. Turn the machine off.

3. Hinge open the tank to expose the batteries. (See figure 50.) Caution: ***(always wear eye protection when batteries are exposed)***

4. Check the water level in each battery. Do not charge the machine unless the water is slightly higher than the plates. If needed, add enough distilled water to 1/2" above the plates. Do not over fill. Batteries can overflow during charging. Replace caps before charging.

5. Plug the extension cord into a grounded 110 volt/60 Hz standard wall outlet & flip switch. (See picture to the left)
*** NOTE: MUST HAVE 20 AMP SERVICE.**

6. The charger will automatically begin charging, and automatically shut off when fully charged (Check gauge)

7. After the charger has turned off, unplug the extension cord from the machine and disconnect from the wall outlet. (See picture to the left)

8. Recheck the cell level after charging. If needed, add distilled water up to the correct level. Be certain to replace the caps securely and to wipe off the top of the batteries.

Description of LED

Red LED Battery level low.

Yellow Led Battery at 1/2 charge.

Green LED battery fully charged.

BATTERY CHARGER

OPERATING MANUAL

GENERAL INFORMATION AND WARNING

- Electronic automatic battery charger with microprocessor suitable for any battery type.
- Fully automatic charging cycle with electronic setting; protected against overload, short-circuit at clamps and reversed polarity.
- Never disconnect the battery while charging: this could cause sparks.
- Never use the equipment in the rain, in areas used for washing and in damp areas.
- Before starting to charge, make sure the voltage of the equipment suits the voltage of the battery and that the selected charging curve (for lead-acid free batteries and airtight gel batteries) is correct for the type of battery to be charged. In addition, make sure the rated input voltage of the charger suits the available supply voltage and the system is equipped with grounding.
- If necessary, replace the fuse with another of the same type and value as indicated on the rating plate.
- Pay attention to any remarks of the battery manufacturer.

For lead-acid batteries with liquid electrolyte:

- Control the water level after each charging process.
- Refill with distilled water only.
- Caution! The gases generated during charging are explosive. Do not smoke in the vicinity of the batteries. When working with cables and electrical equipment, avoid open flame and sparks.
- Attention: Use protective glasses and gloves during battery maintenance. Battery acid causes injuries. In case of contact with battery acid, wash the affected parts with a lot of fresh water and consult a doctor if necessary.

CONTROLS (see figure behind the cover)

1. Three-digit display + symbol (1), to view A =the charging current, U = the battery voltage, h = the charging time, C = the charging ampere-hours [AH], E = the energy used [KWh].
2. Button for the **S**election of the display mode (2): A, U, h, C, E. After about 10 seconds the display returns to the visualization of the charging current.
3. Red control indicator (3): when it is on, the charging cycle has started.
4. Yellow control indicator (4): when it is on, the final phase of the charging cycle has started.
5. Green control indicator (5): when it is on, the charging cycle has finished.

OPERATION

- Plug the cord into the socket.
- Connect the battery, checking the polarity.
- Now, the battery charger's display will show a sequence of details on the charger's internal programming: after the name "SPE", it will show the software release installed in the equipment, then, in sequence, the following parameters: battery voltage, charging current, charging curve number, and finally the words **"GEL"** or **"Acd"** depending on the set up charging curve being suitable for airtight gel batteries or lead-acid batteries. **Make sure the type of batteries to be charged (gel or lead-acid batteries) matches the displayed details ("GEL" or "Acd", respectively). If it doesn't, contact our dealer.** Now, a test is run on the battery voltage to decide if the charging process should be started or not. If the battery is not connected to the battery charger, the display will show the word **"bat"**. The word will stay on, even if the test is failed (for instance, reversed polarities or incorrect battery connection). If the test is passed, the display will show the battery voltage for approximately 5 seconds and the battery will begin to

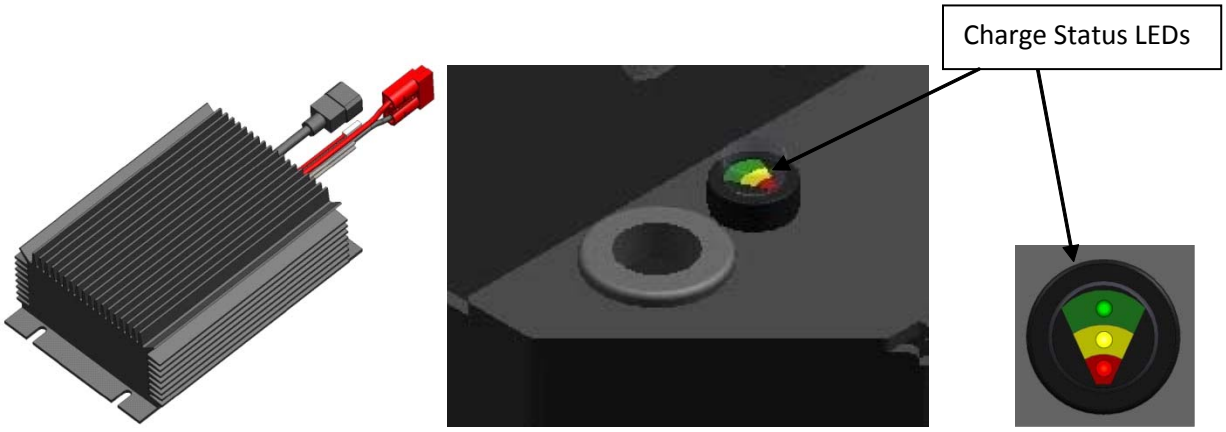
continued on next page

Power Cat 36 Volt 25 Amp Sealed Battery Charger

The Power Cat 3625S is a sealed high frequency electronic battery charger with an on board microprocessor that can be programmed for different types of batteries. The charger features a fully automatic charging cycle and has built in protection against short circuits and reverse polarity.

THE CHARGER UNIT

The charger is equipped with a remote “EZlamp” 3 LED charge state indicator, located on the side of the central command, to show charge cycle information as well as diagnostic codes.



OPERATION

The 3625S is initially switched on by plugging the unit into the wall. The “EZlamp” charge state indicator then displays whether the unit is set for flooded lead or AGM type batteries by flashing the corresponding LEDs. For flooded lead batteries the “EZlamp” will display ONLY the RED LED flashing for about 5 seconds. For AGM batteries the “EZlamp” will display a flashing GREEN & RED LED for about 5 seconds.

continued on next page

Power Cat 36 Volt 25 Amp Sealed Battery Charger

EZlamp Code	Charger Phase
Flashing RED	Internal charger check – “Flooded Lead Settings”
Flashing RED & GREEN	Internal charger check – “AGM Settings”
Steady RED	Indicates first and second phase of charge
Steady YELLOW	Indicates finish charge in progress
Steady GREEN	Indicates charge cycle is complete

TROUBLE SHOOTING

In the event that there is a problem with charger here is a simple trouble shooting guide.

If the unit does not power on, assure that the plug for the charger is placed firmly in the wall receptacle and that that the circuit breaker for that receptacle is not blown. Watch the “EZlamp” indicator to see if any LEDs illuminate when it is plugged in. If no LEDs light try a different power cord. If this does not fix the problem the charger needs to be replaced.

EZlamp Fault Codes	Problem	Solution
Continuous flashing RED	- No connection to battery - Battery connected in reverse	-Check connections to battery
Flashing RED & YELLOW	- Poor Connection	- Check all connections - Verify battery was not disconnected during charge
	- Problem with battery	- Check battery - Verify battery electrolyte levels (lead acid only)

Changing Batteries

Stop machine in a clean area next to the charger. Turn off machine.
For safety: Before leaving or servicing the machine; stop on level surface, turn off machine and remove key. Use eye protection.

1. Tip back tank to expose batteries.

2. Disconnect main battery cables from machine.

3. Use the proper size wrench to disconnect main ground wire first and secure cable terminal away from batteries.

4. Disconnect main positive lead and secure cable and remove one at a time.

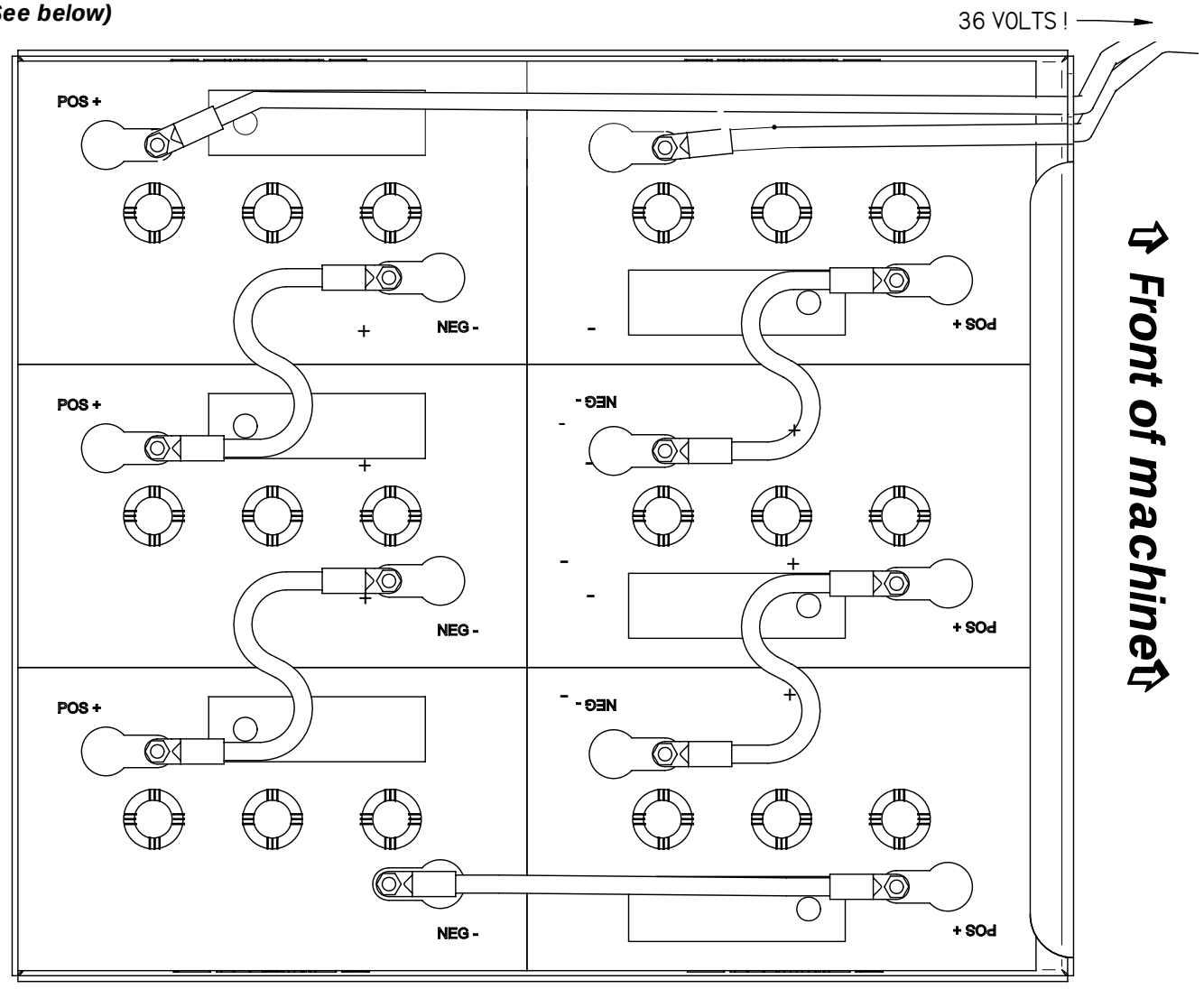
5. Loosen both terminals on each jumper cable and remove one at a time, and place away from machine.

6. Prepare a suitable site to place the batteries, store on a wood pallet, not on concrete.

7. Attach suitable battery lifting device and lift batteries from the machine

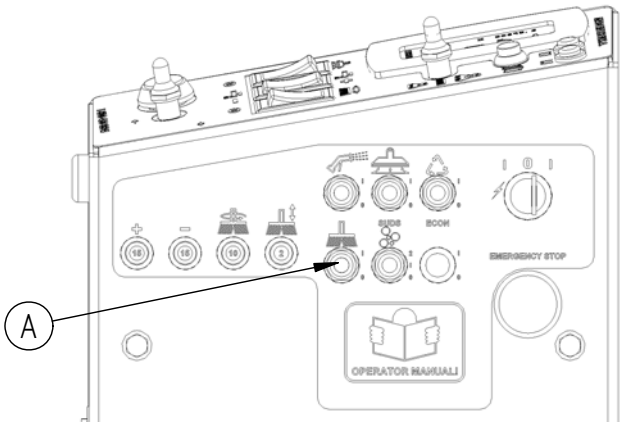
Warning!

Batteries are a possible environmental hazard & extremely heavy. Consult your battery supplier for safe removal & disposal methods. Use a hoist, batteries are heavey use caution!
Note orientation of the positive and negative posts is critical for cables to reach.
Do not lift from battery posts, which cannot support the weight.
(See below)



Side Broom System

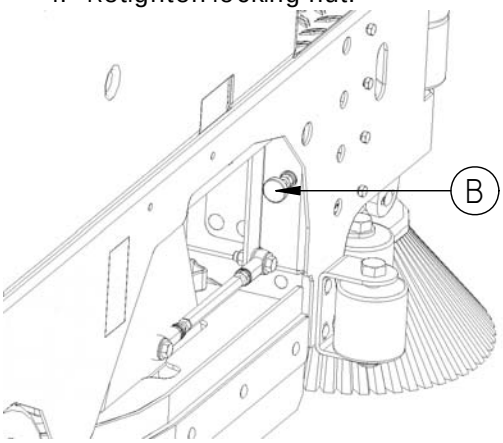
1. Flip side broom switch ***(A)*** up to lower and engage broom. ***(See picture below)***



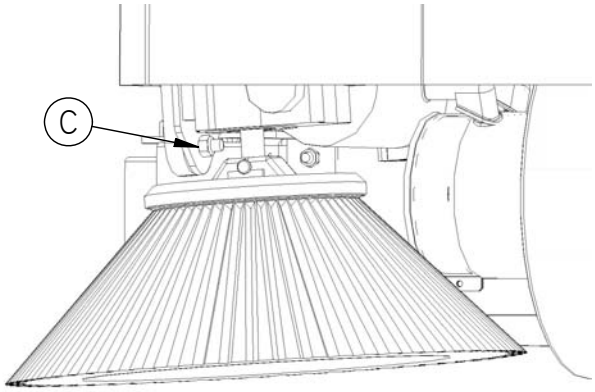
2. To adjust side broom height, loosen locking nut located behind screwhead **(B)** of screw that is in front of scrubdeck just inside the side wall of frame on each side of the machine. Use 1/2" wrench to loosen locking nut. ***(See picture below)***

3. Turn adjustment screw **(B)** counter-clockwise ***(loosens)*** to lower side brooms. Turn screw clock-wise *(**tightens**) to* raise side brooms.

4. Retighten locking nut.



5. Side broom adjustment slot **(C)**. ***(See picture below)***



6. Picture below shows brooms to high.

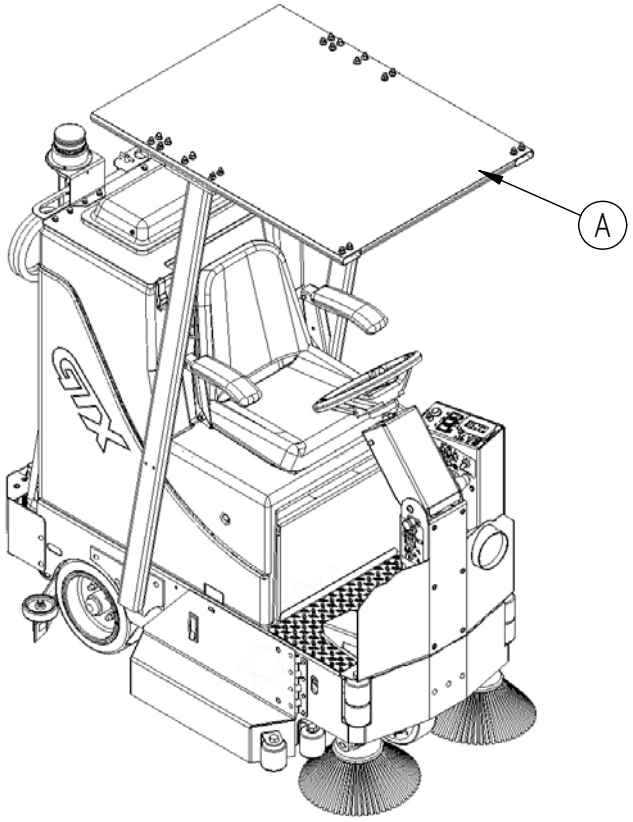
7. Picture below shows brooms to low.

8. Picture below shows brooms just right.

Machine options

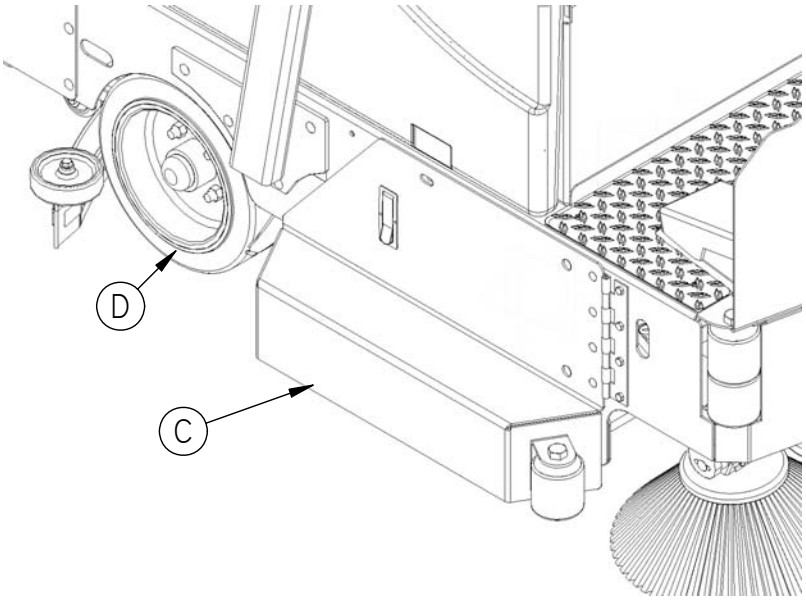
Overhead Guard

1. Your machine may be equipped with an***"optional"*** "Overhead Guard" ***(A)*** that helps protect the operator from falling objects that are above the operators head***.*** ***(See picture below)***



HD Side Doors

1. Your machine may be equipped with ***"optional"*** "Heavy Duty Side Doors" ***(C)*** that helps protect the machine's scrubdeck from collision damage***.*** ***(See picture below)***

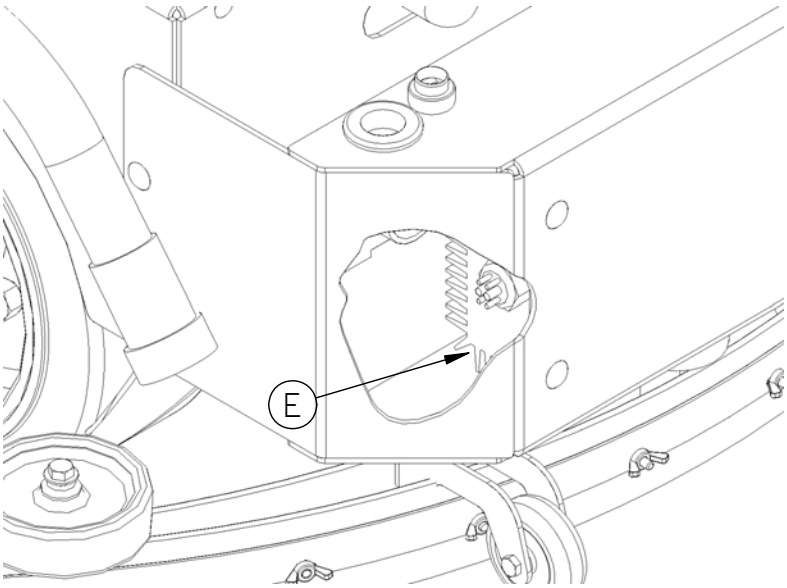


Non-marking tires

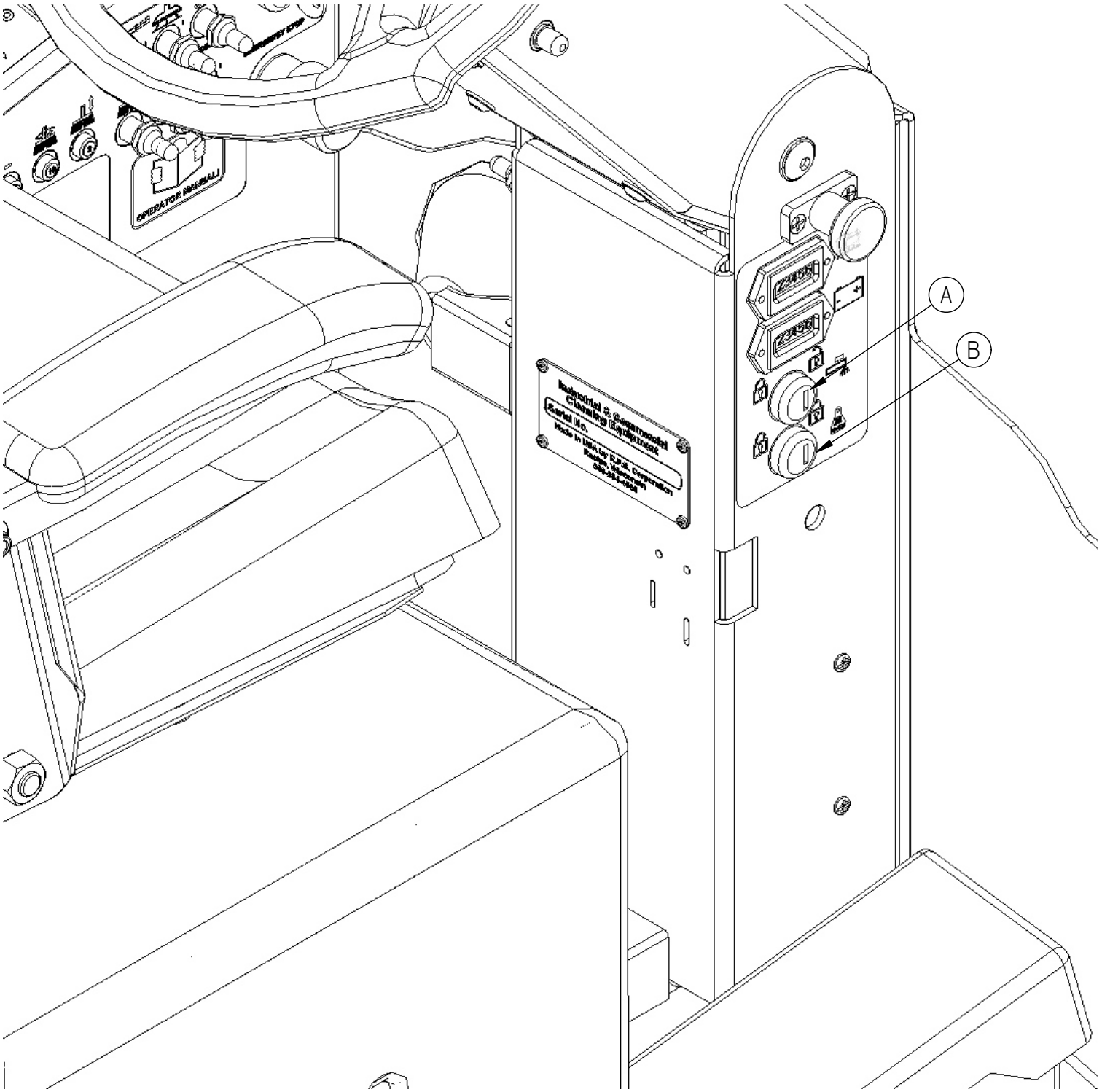
1. Your machine may be equipped with non marking ***(D)*** tires, which may have reduced traction on some floors ***(See picture above)***

On-board charger

1. Your machine may be equipped with ***"optional"*** "On-board charger ***(E)*** that will charge your machine. ***(See pictureto the right)***



Machine options



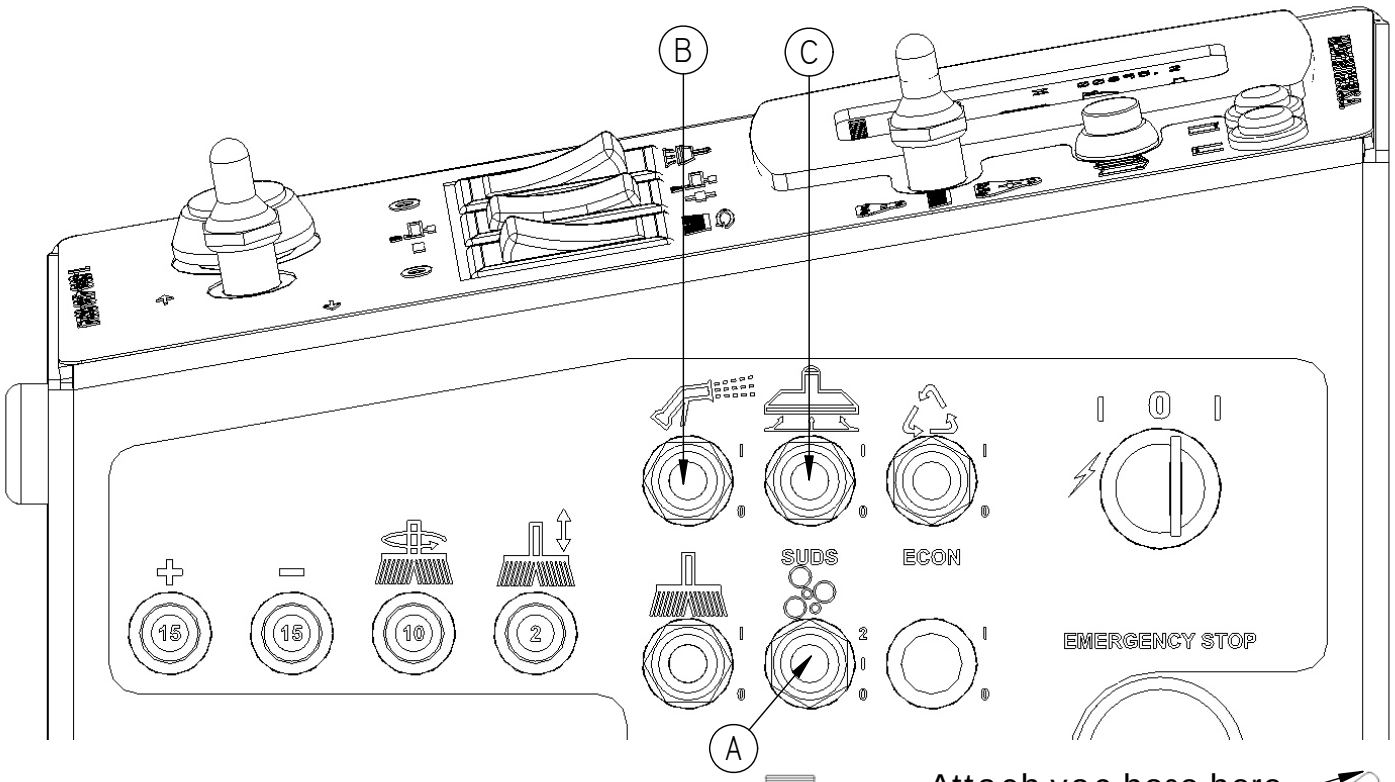
Water control lock out

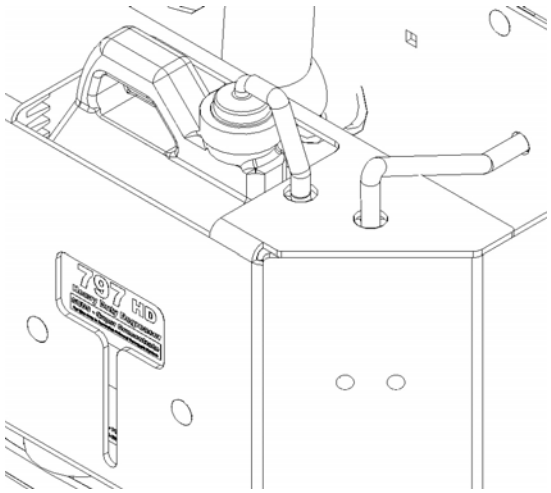
Your machine may be equipped with a ***"optional"*** water control lock out switch ***(A)***, which prevents people from changing the water levels on the machine.
(See picture above)

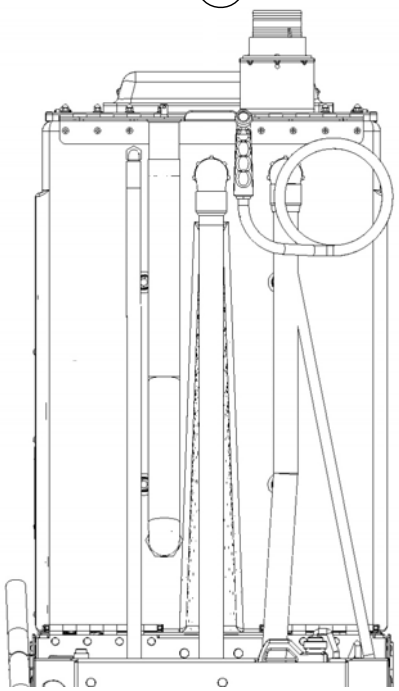
Down pressure lock-out

Your machine may be equipped with a ***"optional"*** down pressure lock out switch ***(B)***, which prevents people from changing the down presure on the machine.
(See picture above)

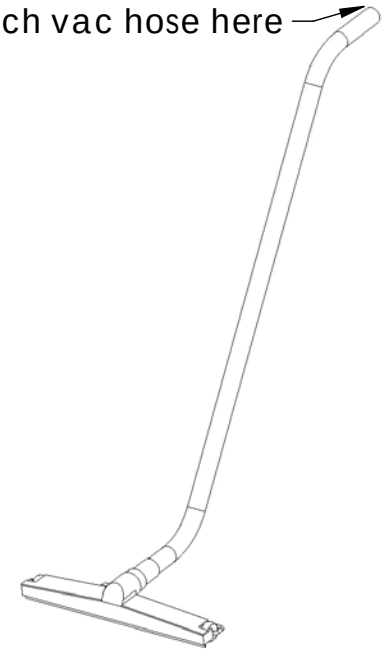
Machine options





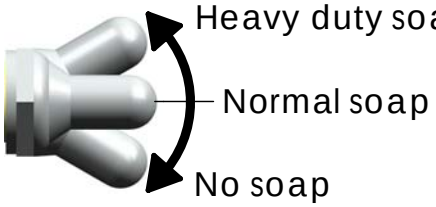


Attach vac hose here



On-board Soap

1. Switch toggel switch up once for normal soap distribution and up twice for heavy duty soap distribution.
(See picture at top of the page item "A").



Spray Hose

1. Turn on spray jet pump using the togle switch on the central command.
(See picture at top of page item "B")
2. Detach srap hose from back of machine and squieeze handel.
(See picture above)

Vac Wand

1. Detach vac hose from squeegee and attach it to the vac wand.
(See picture above)
2. Turn on vac motors using the togle switch on the central command.
(See picture at top of page item "C")

Maintenance

Daily Maintenance

1. Remove and clean pads or brushes. Never use soiled pads when cleaning. Replace pads when they become packed with residue.

2. Remove and clean debris from the float shut-off screen and drain saver located inside the recovery tank.

3. Drain and rinse tanks thoroughly

4. Inspect vacuum hose for any objects obstructing the air flow.

5. Raise squeegee and wiper blades with a clean cloth. Store squeegee in the raised position to prevent damage or setting of the blades.

6. Wipe down machine if needed. Use a nonabrasive, non solvent cleaner, or a clean damp cloth.

7. Recharge the batteries if needed.

Weekly Maintenance

1. Check battery water level in each cell of the batteries, and fill as needed. Always usedistilled water to refill batteries. Batteries should be filled approximately 3/4" to 1" above the plates. Overfilling will cause the batteries to leak during charging. The charging process creates gas bubbles inside the battery, which effectively increases the volume of the electrolyte.

2. Clean battery tops to prevent corrosion.

3. Rotate brushes. Rotate the left to the right and right to left. On cylindrical models from front to back, or end to end if using different materials.

4. Drain and rinse tanks thoroughly. To thoroughly flush out any solution chemicals in solution line and valves, refill solution tank with a few gallons of warm clean water and run machine until tank is empty.

Monthly Maintenance

1. Check scrub head and squeegee lifting cables for wear and spring tension.

2. Check machine for water leaks and loose nuts and bolts.

3. Check to see if battery cables are tightened (Tighten if needed)

4. Check parking brake

Yearly Maintenance

1. Call your local dealer for yearly maintenance

Storing Machine

1. Be sure to flush the tanks out completely. To thoroughly flush out any solution chemicals in solution line and valves, refill solution tank with a few gallons of warm clean water and run machine until tank is empty.

2. Open the recovery tank lid to promote air circulation.

3. Raise brushes and squeegee.

Checking Battery Specific Gravity

Use a hydrometer to check the battery specific gravity.

Checking Gravity
A. Hydrometer
B. Battery

Note: do not take readings immediately after adding distilled water, if water and acid are not thoroughly mixed, the reading may not be accurate.

Check the hydrometer against this chart

SPECIFIC GRAVITY @ 80˚ F (27˚C)	BATTERY CONDITION
1.265	100% CHARGED
1.225	75% CHARGED
1.190	50% CHARGED
1.155	25% CHARGED
1.120	DISCHARGED

Note: if the readings are taken when the battery electrolyte is any temperature other than 80˚F (27˚C), the reading must be temperature corrected.

To find the corrected specific gravity reading when the temperature of the battery electrolyte is other than 80˚F (27˚C): add (+) to the specific gravity reading 0.004 (4 points), for each 10˚F (6˚C) above 80˚ (27˚C).
subtract (-) from the specific reading 0.004 (4 points), for each 10˚F (6˚C) below 80˚F (27˚C).

Maintenance Service Schedule

Maintenance Sevice Schedule					
Maintenance	Before each work period	After each work period	50 hrs	100 hrs	200 hrs
Check water level of batteries after charging add distilled water if necessary	X				
Check that recovery tank cover seals tightly	X				
Visualy check for damaged or worn tires	X				
Check brushes or pads for proper installation	X				
Check vacuum hose connections	X				
Check that squeegee is securely attached and properly adjusted	X				
Check that side squeegees are properly adjusted	x				
Check for attached drain hose, plug and caps	X				
Check parking brake and steering for proper operation	X				
Inspect vacuum filter for debris		X			
Clean out solution tank and filter, check flow		X			
Run vacuum motors to dry		X			
Clean brushes or pads and check for wear		X			
Clean main and side squeegee blades and check for wear		X			
Clean out recovery tank and vacuum filter		X			
Clean and inspect flow shutoff		X			
Clean outside of tanks and check for damages		X			
Store with tank covers open		X			
Charge batteries		X			
Check side squeegee for wear			X		
Clean off top of batteries			X		
Check battery cells with hydrometer			X		
Inspect scrub deck skirt			X		
Clean solution strainer			X		
Check battery connections are tight			X		
Check parking brake adjustment				X	
Check battery case and battery compartment					X
Check brake for damage or wear					X
Clean pivot points on squeegee and scrub deck					X
Check all motors for carbon brush wear					X
Check motor commutators					X
Check steering chain tensioner					X
NOTE: Traction drive, wheels and batteries should be serviced based on traction drive hour meter. The scrub brush hour meter should be used for all other service schedule items.					

Preventative Maintenance Records

CUSTOMER INFORMATION		
CUSTOMER		
ADDRESS		
CITY	STATE	ZIP CODE

MACHINE INFORMATION	
MODEL #	SERIAL #
WORK ORDER#	HOUR METER:

BATTERY CONDITION	Cell #1	Cell #2	Cell #3
Battery # 1 Hydrometer Reading			
Battery # 1 Water Condition			
Battery # 2 Hydrometer Reading			
Battery # 2 Water condition			
Battery # 3 Hydrometer Reading			
Battery # 3 Water Condition			
Battery # 4 Hydrometer Reading			
Battery # 4 Water condition			
Battery # 5 Hydrometer Reading			
Battery # 5 Water Condition			
Battery # 6 Hydrometer Reading			
Battery # 6 Water Condition			

Clean Battery Tops. Check Battery Cable and Terminal Condition

NOTES:

BRUSH CONDITION					
Scrub Brush Fiber Length			Rotated Brushes		
Brush Drive Sockets		Good	Worn	Needs Replacement	
Drive Hubs		Good	Worn	Needs Replacement	
Side Broom Condition		Good	Worn	Needs Replacement	Rotated Side to Side

CHECK OPERATION AND CONDITION OF:	IN SPEC	REPAIR	PROBLEM
Steering wheel Tilt Mechanism			
Key Switch			
Horn			
Head Light			
LCD Display			
Page Button			
Brush Pressure Button			
Brush Pressure Managers Lock Out			
Foot Pedal			
Reverse Switch			
Back Up Alarm			
One Touch Switch			

continued on next page

Preventative Maintenance Records

CHECK OPERATION AND CONDITION OF:	IN SPEC	REPAIR	PROBLEM
Brush Switch			
Solution Potentiometer			
Solution Solenoid			
Solution Drain Valve			
Low Solution Light			
Brush Deck Lift System			
Brush Motors & Motor Brushes			
Vacuum Switch			
Vacuum Motor performance			
Off-Board Vac Switch			
Squeegee Lift System			
Squeegee Adjustment			
Squeegee Blades			
High Recovery Light			
High Recovery Alarm			
Drain Hose and Plug			
Side Broom Operation			
Spray Jet Switch			
Spray Jet Pump, Hose & Nozzle			
Strobe Light			
Battery Charger Connectors			
Battery Charger			
CLEAN AND/OR LUBRICATE	**IN SPEC**	**REPAIR**	**PROBLEM**
Solution Filter			
Squeegee pivot points & Knobs			
Scrub Deck Linkage			
Steering Chain			
VISUALLY INSPECT:	**IN SPEC**	**REPAIR**	**PROBLEM**
Solution Tank Condition			
Recovery Tank & Lid Condition			
Drain Saver			
Vacuum floats			
Vacuum Filter			
Vacuum Motor Brushes			
Vacuum Hoses			
Solution Hoses			
Blade retainers & hardware			
Squeegee Wheels			
Brush skirts			
Brush Motor Brushes			
Brush or Pad Driver Condition			
Drive Wheel Condition			
Rear Wheels Condition			
All Rollers			
COMMENTS			

Technician's Name _____

Technician's Signature _____ Date _____

Customer's Name: _____

continued from previous page

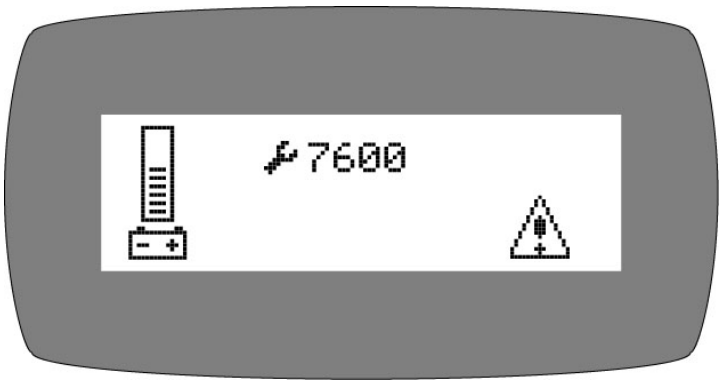
Customer's Signature _____ Date _____

Troubleshooting Central Command

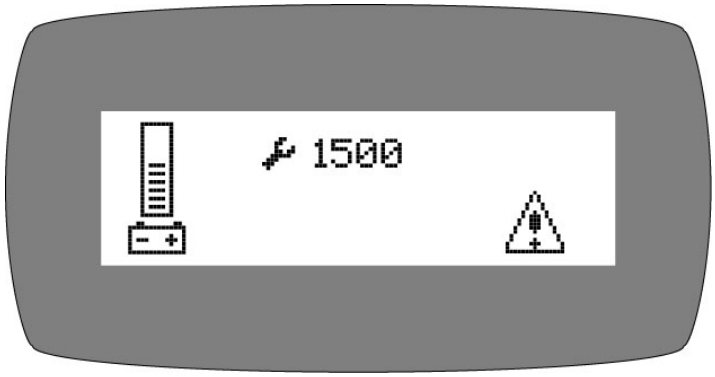
***Note*: this machine is operated by a sophisticated electronic "controller" that has many fail-safes within it. It self-analyzes problems and flashes a four-digit alpha-numeric code of what is wrong in the LCD window.**

Most of these codes require a technician attention. You should not attempt repairs you are unfamiliar with, especially if you are not authorized to work on this equipment.

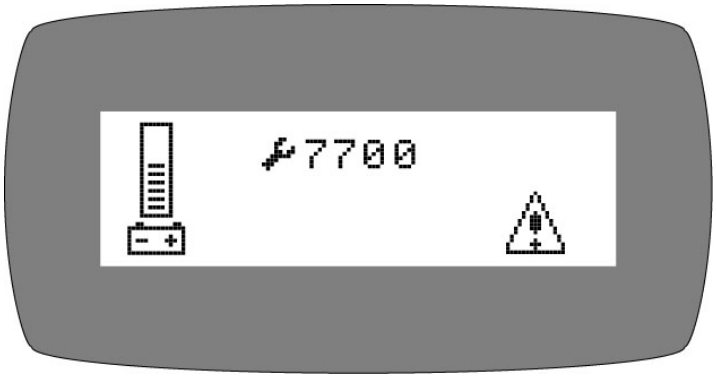
The complete list of codes is published in the *simplified electronic troubleshooting manua*l, which is available to authorized and certified distribution technicians. However, we have included the basic codes that you can usually resolve yourself.



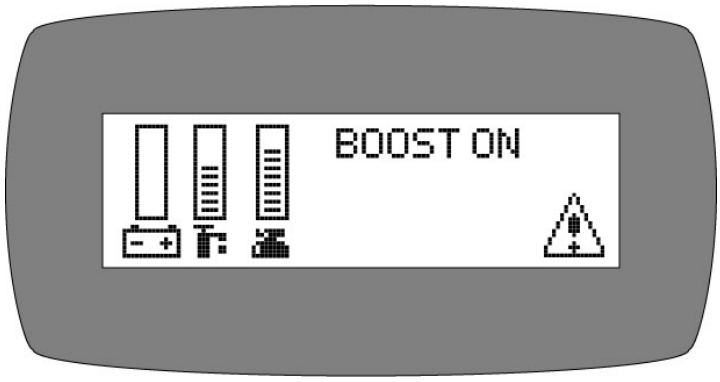
1. 7601 and 7602 Error. Scrub deck current over load. This can occur when driving over a bump in the floor. To restart, turn off the key and turn it on again. To avoid this error, either slow down on bumpy parts of the floor, or reduce down pressure on the pads.



2. 1500 Error. There is an open in the parking brake circuit. Check the parking brake wiring and the parking brake coil to find the open circuit.

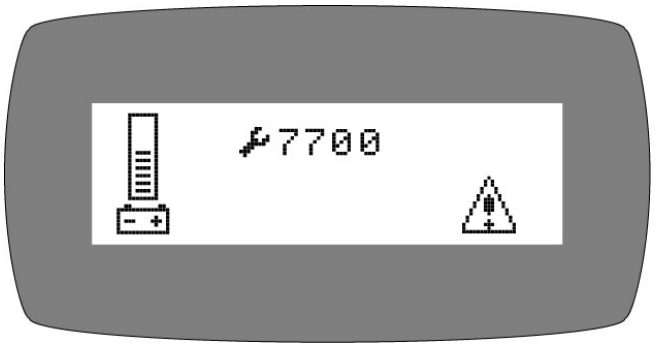


3. 7700, 7701, 7702, and 7703 Error. The vacuum motor has exceeded their authorized power limits. Turn off key and turn on again to clear.

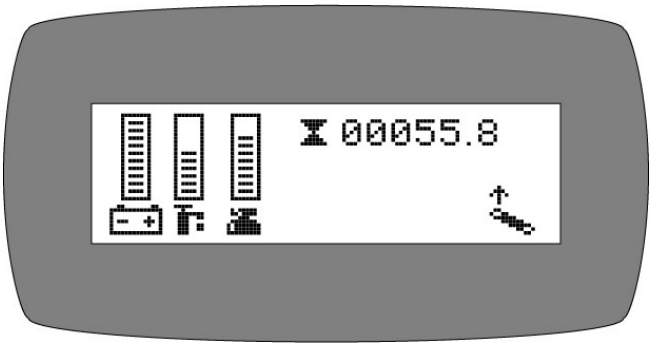


4. **BOOST ON** Allows front wheel drive to draw more power when needed to climb ramps for 30 seconds.

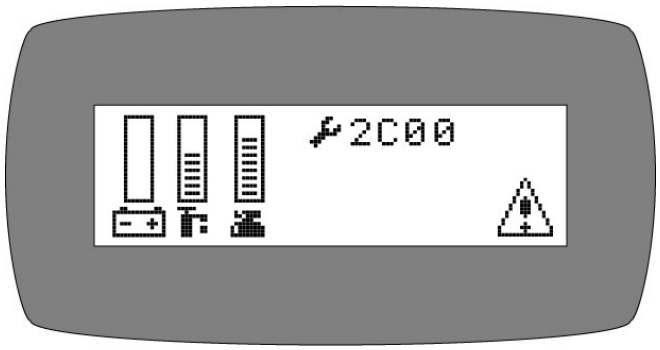
Troubleshooting Central Command



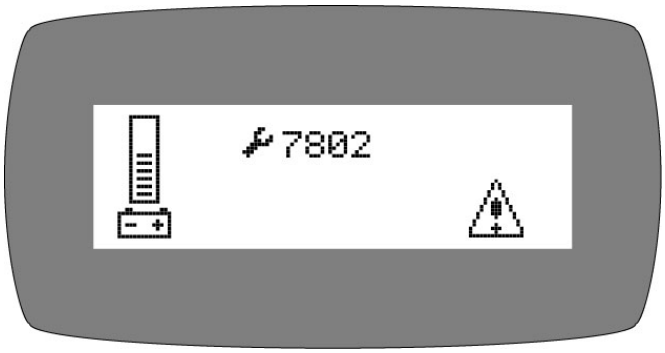
5. 7700. Vacuum motor circuit is open.



6. Throttle error. You pressed the foot pedal before turning on the key. Turn off the key and try again, leaving foot off of the pedal.



7. 2C00 and 2C01 error. Low voltage warning. Voltage has dropped down below the minimum required to operate the machine. If you wait a few minutes, the batteries may come up in voltage, allowing you to drive very slowly to the recharge station. If not, you will have to release the parking brake (on the front wheel, pull lever toward the front of the machine to release) and push the machine to recharging station. You must disconnect the traction motor! (+ cable first)



8. 7802 error. The traction motor pulled excessive current perhaps running a ramp for more than the 60 seconds allowing for this. Turn off the key, turn on again, and continue. You should not use this machine to climb ramps so steep and so long that this code comes up repeatedly, or you could overheat the traction motor.

9. All other error codes. Turn off the key, and disconnect the positive battery cable from the batteries for more than one minute (the time is needed to drain the controler on-board capacitor). Reconnect cables, being sure that it is tight. ***Too loose and you will burn battery. If you over tighten the cables you can damage the battery lead terminal. Try again.***

10. If the problems cannot be solved by any of this solution, call your local dealer service department.

TROUBLESHOOTING CENTRAL COMMAND II V4

Code	Fault Description	Course of correction
0700	Bias Voltage Error	High reference signal is grounded
0701	Mid Rail Voltage High	
0702	Mid rail bias voltage high	
0704	12V supply failure	
0705	2.5 V reference error	
0706	High reference ground fault	5 Volt reference is Contacting 0 Volt Reference
0810	Throttle High reference error	For all Throttle Diagnostic Codes
0811	Throttle Max Wiper Difference Error	Check throttle wiring for shorts or opens. Repair or replace as necessary.
0812	Throttle Max Pull Down Difference Error	If diagnostic code is not cleared, then replace the throttle potentiometer
0813	Throttle Max Pull Safe Difference Error	
0814	Throttle Reference Error	
0815	Throttle Lo Reference Error	
0816	Throttle Hi Reference ISO Error	
0817	Throttle Lo Reference ISO Error	
0818	Throttle Error: Both have Readings	
0A01	Power down error	Check the wiring to the the main power switch. This code indicates rapid power cycling
1310	Excessive Current Trip	Current Draw on Control exceeds maximum limit of 250 amps
		Resistance in the machine's Main Breaker and/or battery cable to control
		Gives a false reading to the control.
1311	Brush head actuator, excessive current	Device connected to the brush head actuator has exceeded maximum
		limit of 21 amps surge value and 7 amps continuous.
		Check that the arms are not too tight (torque = 25 inch lbs, almost finger
		loose). check that actuator system is not binding.
1312	Squeegee actuator, excessive current	Device connected to squeegee actuator (on riders) has exceeded max
		limit of 21 amps surge value and 7 amps continuous load.
		Check that the arms are not too tight (torque = 25 inch lbs, almost finger
		loose). check that actuator system is not binding.
1313	Solution valve circuit, excessive current	Current exceeded seven amps max. Check valve operation. Coil may
		be corroded, or short in wires.
1314	Soft Aux 4 Over current Occurred	Aux 4 is not used by us at this time.
1318	Soft Brake light Over current Occurred	Brake light circuit not used by us at this time.
131C	Backup Alarm Over current occurred	Backup alarm drew more than 2 amps max allowed. Check inline resistor
		on some models. If resistor is bad, remove it, and put piece of duct tape
		over speaker of alarm. (Reverse EMF from the echo is causing the problem)
1321	Aux 1 (Brush Actuator) Over current 2 Occurred	Brush actuator exceeded 12 amps for less than 0.1 sec.
		See notes for 1311
1322	Aux 2 (Squeegee Actuator) Over current 2 Occurred	Squeegee actuator exceeded 12 amps for less than 0.1 sec.
		See notes for 1312
1400	Bridge Fault 1 - Brush or traction motor not in correct voltage range.	Possible short between B+ and the high amperage outputs
1401	Bridge Fault 2 - Voltage difference on traction bridge too great	
1402	Brush Bridge Fault - Battery/Brush bridge voltage difference too great	
1411	Brush actuator positive wire is shorting	Find appropriate wire and remove short.
1412	Brush actuator negative wire is shorting	Find appropriate wire and remove short.
1413	Squeegee actuator positive wire is shorting	Find appropriate wire and remove short.
1414	Squeegee actuator negative wire is shorting	Find appropriate wire and remove short.
1500	Brake Fault - Solenoid brake circuit is open	Parking Brake is disconnected or coil of brake is open.
1501	Brake Fault - Solenoid brake circuit is shorted	Parking Brake coil or wiring is shorted.
1502	Brake Fault - Brake Over Current Error	Parking brake coil is shorted internally or wiring too it is shorted
1503	Solenoid brake driver fault	
1504	Solenoid brake interlock fault	
1507	Brake Over current	Parking Brake is drawing too much power. Check wiring and brake.
1600	High Battery Error	Battery voltage is too high. Batteries hooked up wrong, or still on charger.
1D02	Spec Change Trip	This is normal--comes up when you reprogram the control. Turn key off and
		on to reset the program.
1E03	Inhibit activated	Inhibit is power signal intended to turn off control. We don't use it.
1E04	Inhibit Activated 2	Inhibit is power signal intended to turn off control. We don't use it.
1E06	Inhibit Input Out of Range	Inhibit circuit voltage is too low or high to work. We don't use Inhibit.
2C00	Low Battery Error	Voltage in battery is too low (18 volts min on 24V system; 28V on 36V system)
2C01	Low Battery Error--2	Recharge the battery in either case. check voltage under load to see if bad
2C02	Battery lockout occurred	cell is pulling down voltage.
2C03	Battery Lockout occurred--2	
2F01	Throttle Displaced Error	Pedal was pushed before key turned on. Not a problem. Restart machine.
3A00	Bad Program Settings	You reprogrammed the control with settings that are not authorized.
3100	Low bridge voltage	Probable short circuit of output device or wiring
3101	Traction bridge fault	
3102	Brush/Vac bridge fault	
3103	Waiting for bridge to charge	
7000	Startup With Push Selected	Freewheel input signal selected at startup. Disconnect freewheel switch.

CONTINUED ON NEXT PAGE

TROUBLESHOOTING CENTRAL COMMAND II V4

CONTINUED FROM PREVIOUS PAGE

7001	Push Activated in Drive Mode	Freewheel input signal activated while driving. Disconnect freewheel switch.
		NOTE: As of this reading, we do not use Freewheel. This permits pushing
		machine more easily by disconnecting traction motor from control.
7500	Throttle Comms Time Out	Problem with LCD dash module or with wiring to it. Check and replace as necessary.
7501	LCD Module settings corrupt	Disconnect batteries and wait 2 minutes to reconnect
7600	Brush motor not connected	Check for open circuit
7601	Soft Brush Current Fold back	Too much load on brush motor. May be from hitting a bump or wire tangled in
		brush drive mechanism. Possible wiring or brush motor short.
7602	Soft Brush Current Foldback--2	Same as above.
7603	Soft Brush Current Foldback--3	Same as above.
7604	Brush Inhibit is on	We do not use Brush Inhibit at this time.
7605	Brush startup over current detection	You may have started brushes on carpet or rubber or other high resistance material.
		This may have stalled motor before actuator could react to lift brush head up.
		If chronic problem, call Factory to discuss reprogramming machine for application.
7700	Soft Vacuum Motor Disconnected Error	Check wiring to vac motor. On 390, check wiring to Hella relay for vac motor
7701	Vac Motor Current Fold back	Too much amp load on vac circuit. Check wiring. May come from picking up
		large column of water.
7702	Soft Vacuum Current Foldback--2	Same as above
7703	Soft Vacuum Current Foldback--3	Same as above
7800	Traction Motor Fault No. 1	Check traction motor wiring and connectors. Include connector at steering pivot under
		floor cover!
7801	Traction Motor Over current Error	Too much current due to bad motor or wiring to motor.
7802	Soft Traction Motor in Fold back State	Traction motor being overloaded, or ramp climbing that took longer than 60 seconds.
		(Fold back means normal low amp setting to motor. There is one minute ramp climbing
		surge that may be 4 times as high as the fold back rate).
7803	Motor Line Voltages Instability Timeout	May be loose wire at motor or at control. Possible motor problem
7880	Traction Speed Input Out of Range	Throttle setting wrong for motor speed. Check throttle pot. and wiring.
7900	Emergency Stop Error	Emergency Stop Button is Actuated when you tried to move. Optional button.
7901	Soft Belly Button Actuated	Belly Button Switch activated. We don't use this.
8000	Service Mode	Service Timer Limits have been reached. We don't normally use them; they are
		dealer option.
9000	Brushes not fitted	Check brush deck to make sure brushes are on, and on securely.
0003	Possible terminal short in system	For all of these Diagnostic Codes:
0100		1. Turn off keyswitch and disconnect battery for two minutes, using your watch to
0204		measure time.
0A01		2. When you reconnect battery, you must see a spark. This shows the control's
0B02		on-board capacitor has been discharged and has been refilled.
1704		3. Restore the battery connection. Make sure battery cable is on tight before trying
1705		machine or you could burn battery posts and cable.
1706		4. Turn on machine. If diagnostic code still shows, then replace the control.

Troubleshooting

Problem	Cause	Solution
No power, nothing operates	Faulty key switch	Contact local servicing dealer
	Batteries need charging	See charging batteries
	Faulty battery	Replace battery
	Loose battery cable	Tighten loose cable
	Main circuit breaker tripped	Wait 5 minutes for auto reset
		Determine cause and correct
Brush motor(s) do not operate	Brush deck is not down	Put brush deck down
	Foot pedal is not depressed	Engage foot pedal
	Brush circuit breaker tripped	Wait 5 minutes for auto reset
		Determine cause and correct
	Carbon brushes worn	Contact local servicing dealer
	Faulty brush motor or wires	Contact local servicing dealer
Drive motor does not operate	Recharge switch misadjusted	Contact local servicing dealer
	Faulty speed controller or wires	Contact local servicing dealer
	Faulty drive motor	Contact local servicing dealer
	Faulty wiring	Contact local servicing dealer
	Carbon brushes worn	Contact local servicing dealer
Vacuum motor does not operate	Squeegee is in the up position	Rotate squeegee lift lever down
	Faulty vacuum switch	Try operating "white" toggle
	Vacuum circuit breaker tripped	Wait 5 minutes for auto reset
		Determine cause and correct
	Faulty vacuum motor	Contact local servicing dealer
Drive motor runs incorrectly	Faulty speed controller or wires	Contact local servicing dealer
	Faulty potentiometer	Contact local servicing dealer
	Loose wires	Contact local servicing dealer
Insufficient solution flow	Solution tank low	Refill solution tank, drain recovery tank
	Flow knob turned down	Move lever to on
	Solution filter clogged	Remove cover and clean
	Solution line clogged	Remove and blow out with compressed air
	Solution valve clogged	Remove cover and clean

Troubleshooting

Problem	Cause	Solution
No solution flow	No solution in tank	Fill solution tank
	Solution valve off	Rotate lever to on
	Solution switch off	Turn solution switch on
	Solution screen clogged	Remove and clean screen
	Faulty solution solenoid	Contact local servicing dealer
	Faulty solution switch	Contact local servicing dealer
Poor water recovery	Recovery tank is full	Empty recovery tank
	Ball/screen in recovery	Remove screen and clean
	Tank is clogged	Remove debris
	Vacuum hose is clogged	Remove debris
	Squeegee is clogged	Rotate or replace blades
	Squeegee blade is worn	Contact local servicing dealer
	Faulty vacuum hose	Contact local servicing dealer
	Vacuum motor gasket torn	Contact local servicing dealer
	Tank gasket faulty	Tighten lid
	Drain plug loose	Contact local servicing dealer
	Vac motor faulty	Charge batteries overnight
	Battery charge low	
Poor water recovery on turns	Wipers worn	Replace wiper material
	Wipers chatter	Tighten pivot points
	Squeegee swing is binding	Contact local servicing dealer
	Incorrect squeegee size	Contact local servicing dealer
Rear tires noisy	Bearing dry	Grease bearings
	Faulty hubs	Contact local servicing dealer
Poor traction	Excessive brush pressure	Reduce pressure with switch
	Worn drive tire	
	Heavy soap concentration	Contact local servicing dealer
Short run time	Batteries run down	Charge batteries twice
	Batteries still down	Contact local servicing dealer
	Batteries low on water	Fill with distilled water to 3/4" above the lead plates
	Batteries over cycled	Contact local servicing dealer